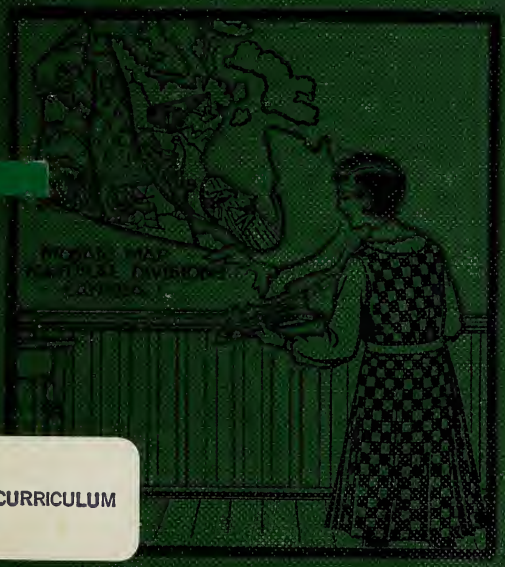
Canadian Neighbourhood

HARRY AMOSS



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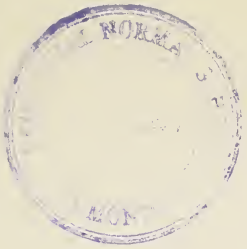

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CANADIAN NEIGHBOURHOOD

A Geography Reader for Grades V, VI, VII and VIII

Courtesy of the Department of Railways and Canals, Ottawa

WELLAND CANAL, LOCK No. 1, LOOKING NORTH (See Chapter XV-II)

Canadian Neighbourhood

BY

HARRY AMOSS

Inspector, Department of Education, Ontario

AUTHOR OF

PLAY STORY GEOGRAPHY
TRAINING HANDICAPPED CHILDREN
CANADIAN NEIGHBOURS

Illustrated by sketches of school room projects

THE RYERSON PRESS ~ TORONTO

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TO MY SISTER

ERIE VINING AMOSS

WHOSE HELP MADE "CANADIAN NEIGHBOURS" AND "CANADIAN NEIGHBOURHOOD" POSSIBLE

118864

PREFACE

Dear Girls and Boys:

Once upon a time, long long ago, Hadra, King of Asia, made proclamation north, east, south and west that the wise men of his kingdom should gather to the capital. Ceph, the Prime Minister, was dead, and another must be chosen to fill his place.

On the day appointed Peri, the Persian, advanced and bowed thrice before the peacock throne.

"O King, live for ever! It is granted thy servant to have studied the scrolls of the ancient past. The wise words of sages I know and the stories of kings and states."

"Brother should counsel of brother," replied the king. "And to-day is brother of yesterday. Yet never the two are twins. Stand thou on my left, noble Peri, and profit me with advice."

Ara, the Arabian, then came forward.

"O King, live for ever! It is granted thy servant to mete alike the mountain and grain of sand, to measure the stars on their rounds and value the markets of men."

"Justice must needs have her scales," replied Hadra. "Yet the pan may hold pebbles or gold. Abide thou likewise on my left, most wise Ara."

Then Indus, the Indian, stepped forth.

"O King, live for ever! To thy servant is granted the gift of the poet and prophet, the builder's conception to plan."

"Indus, beloved of the gods," replied the king. "The rainbow gladdens the morning and heralds the day yet to be. But its purple will spin no robes for the naked. To my left ear always thy voice will be welcome."

Then Asa, the Assyrian, bent thrice his brow.

"O King, live for ever! To-day has crowded out yesterday and left scant room for to-morrow. I know my neighbourhood and love my neighbours."

"O Asa, clear of sight and kindly of eye!" said Hadra the king. "Do thou counsel me on the right."

Thus was Asa, the Assyrian, chosen for the place of Ceph, who had died.

Perhaps the rulers of to-day in industry, commerce, statecraft and art likewise choose as prime ministers men and women who are familiar with real situations and can co-operatively work with their fellows.

In reading CANADIAN NEIGHBOURS you have been interested in learning how Mary and Bob became acquainted with the energetic, intelligent and co-operative way in which the Canadian people are building up a nation. In this book, CANADIAN NEIGHBOURHOOD, is told how Miss Goldenrule's class became still more widely acquainted with their country and country folk and how they were trained through the study of geography to become themselves good Canadian neighbours and citizens.

HARRY AMOSS

Department of Education,
Toronto, Ontario,
January, 1933

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Canadian Neighbourhood

Chapter I

OUR NEW WORLD

THE other day Bob and Bill were comparing exercise books.

"Thank goodness, my old book is nearly full!" said Bob. "There are a few good pages, and it is some better than the book before, but there are altogether too many blots and mistakes. Next Monday I begin a new book and I am going to keep every page as neat and clean as a new whistle."

Five hundred years ago, as Mother Nature looked down on the old world, Europe, she must have felt much as Bob. Perhaps she said to herself:

"Well, I have this continent pretty well filled with people. In some respects it is an improvement over the still older world, Asia. But in many ways it has failed to come up to my expectations. The people are hardy, energetic, brave and intelligent. They have written many wonderful books, built many beautiful cities and established many excellent governments. But they do not seem to understand the lesson of co-operation. No sooner does a country get well under way than some strong man, who should have been a great help rather than a great hindrance, selfishly seizes power and scrawls up the page with misrule. Or some near-by nation, that should have profited by friendly trade and communication with its industrious neighbour, becomes jealous and smears up both pages with a war blot. Lately the war blots have become so numerous that I think it about time to begin a new world. Australia and the two Americas are the only

continents I have left to work in afresh. Some of the best people from the older worlds shall be sent to populate these lands. I do hope they will realize their opportunity, outgrow their little selfish natures and co-operate to make the new worlds three clean, true, beautiful volumes in the library of life."

You have read in your history how, over four hundred years ago, the first white people came from the older continent, Europe, to settle in North America. The French made their home along the banks of the St. Lawrence River. The British settled along the Atlantic coast to the south of the French. The Spanish formed colonies to the south and west.

Due in part to jealousies existing among their mother countries, these three races did not get along well with one another in the new world. For a time it appeared as though the fresh pages of history were to be as badly blotted as the old. But after numerous quarrels, many wars and several bargainings the land was divided much as we find it to-day. The French settlers about the St. Lawrence, together with a number of faithful British from the south, known as the United Empire Loyalists, became the founders of our Canadian nation. Because of their bravery and loyalty Canada is now a partner in the great British Empire.

To the south of Canada other colonies founded by people of British origin united to form a new nation, the United States of America. Huge tracts of land on the west and south were purchased from France and Spain or won by war from Mexico until the United States extended from Atlantic to Pacific Ocean. North-west of Canada a saucepan-shaped land, named Alaska, whose body bulges toward the west, while its long, slim handle stretches half-way down our Pacific front, had been explored and claimed by Russia. This district was likewise purchased and added to the territory of the United States. After a rather

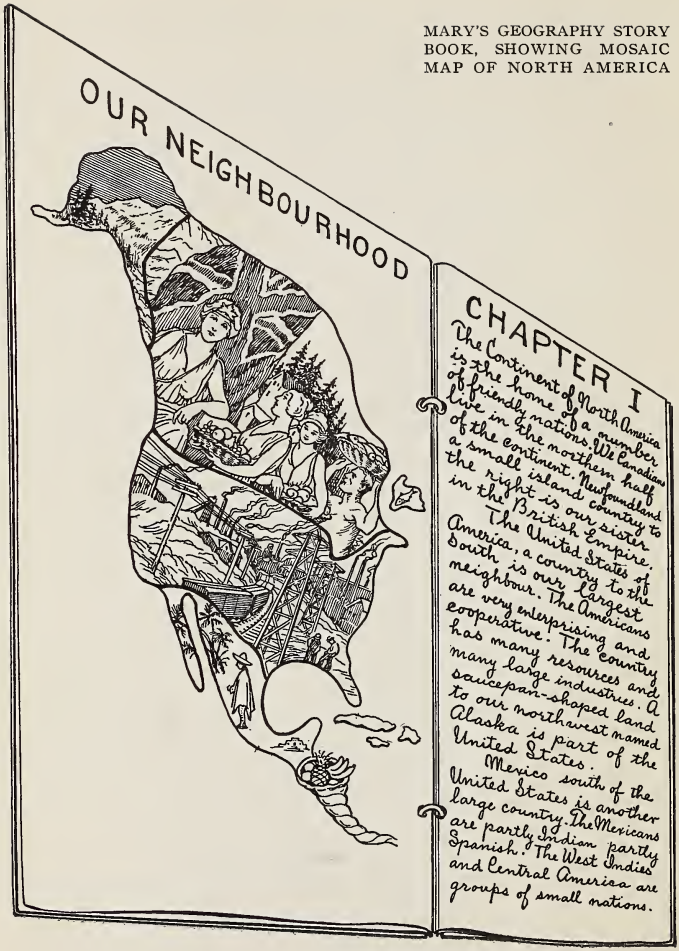
sad beginning Mother Nature must have smiled happily to see a spirit of peaceful bargaining taking the place of conquest in her new world.

Though the two countries are nearly equal in size, the population of the United States is a dozen times that of Canada. Our next-door neighbours, the Americans (as the inhabitants of the United States choose to call themselves), are a shrewd, industrious, good-natured people who have learned to co-operate among themselves on a large scale. A network of railways and highways enables them freely to visit and do business. Huge industries have been established where many men working harmoniously together are able to accomplish much more in the way of production than during the days of small factories and jealous managements. In place of old-world fortresses and castles the cities are adorned with new-world schools and universities where people are trained in the art of living together rather than in the art of living apart. The past disputes between Canada and the United States have long since been forgotten. We visit and trade with each other; read one another's papers; listen to one another's radios; and are the best of friends.

Our eastern neighbour is the Newfoundlander. His home is the island, Newfoundland, together with a strip of land named Labrador, along our Atlantic coast. He is a hale, hearty fellow who makes a living largely by fishing. We hope some day he will consider uniting his home with ours to form a larger nation and a more fully rounded-out country, since Newfoundland, like Canada, is part of the British Empire.

Our next neighbour to the south of the United States is the Mexican. He is a dark-haired, black-eyed, swarthy-skinned chap whose parents may have been Spanish or Indian or both. Though Mexico is less than one-third the size of Canada, its population is twice as great. The pages of its early history were blotted by wars and scrawled by

MARY'S GEOGRAPHY STORY BOOK, SHOWING MOSAIC MAP OF NORTH AMERICA


OUR NEIGHBOURHOOD
CHAPTER I
The Continent of North America is the home of a number of friendly nations. We Canadians live in the northern half of the continent. Newfoundland a small island country to the right is our sister in the British Empire.
The United States of America, a country to the South is our largest neighbour. The Americans are very enterprising and cooperative. The country has many resources and many large industries. A saucepan-shaped land to our northwest named Alaska is part of the United States.
Mexico south of the United States is another large country. The Mexicans are partly Indian partly Spanish. The West Indies and Central America are groups of small nations.

misrule—a cruel conquest of a peaceful and highly-civilized Indian state by Spain—a revolution—a succession of adventurers who seized power and governed the country for their own selfish ends. Lately, however, the spirit of the new world seems to have entered the nation. Since much of the land is fertile, and oil, copper and other minerals are to be found in abundance, we hope soon to have a prosperous, friendly neighbour two doors down.

To the south of Mexico is a group of small nations, the Central Americas, and to the east another group, the West Indies. Compared with our own land, these countries are like tiny gardens beside a huge farm. Nevertheless they raise large quantities of sugar, bananas, pineapples, and other good things for our tables.

Ours is a very happy community. We and our nation neighbours are on the best of terms. If we have disputes, we try to settle them in a fair and friendly fashion. Trade, travel, newspapers and radios have made us well acquainted with one another. Instead of each nation working for and by itself, we are all helping one another to build this new world into a beautiful, happy and prosperous neighbourhood.

After the pupils had found the homes of these various nations upon the map of North America, Miss Goldenrule, their teacher, asked them how they would like to become authors and write a story book. The boys and girls thought this would be great fun.

Each pupil secured two sheets of heavy cardboard ten inches by seven and a half inches, for book covers. Half an inch from one edge, the sheets were punched twice and eyeleted for a laced binding. Fillers of white paper were inserted. A sheet of white paper, eight inches by six inches, was pasted on the outside of the front cover. At the top of this sheet the title of the story, "Our Canada," was printed. At the bottom each author signed his or her name. In the centre was pasted a cut-out picture of some Canadian scene. Around the outer edge was drawn a wreath of maple leaves. The first three pages were numbered

with Roman numerals, the remainder with Arabic numerals. On page I was printed:

CONTENTS

CHAPTER		PAGE
I.	Our New World - - - - - -	1
II.	The Ribs of Our Continent - - . -	3
III.	Etc.	

On page 2 each pupil wrote a brief story entitled "Our New World." Since they were real authors, the boys and girls took great care with writing, spelling, punctuation, and paragraphs. Miss Goldenrule said that this would give them splendid training in composition. On page 1 were pasted cut-out pictures to represent North America and the several countries which make up that continent.

This representation was in the form of what Miss Goldenrule called a *mosaic map*. From various sources her pupils selected pictures, whose content indicated in some way or other the nature of the lands, industries or peoples of the several countries which go to make up the continent of North America. The shape of each country was cut from its corresponding picture according to the plan of a map of North America in the textbook. These "cut-outs" were then fitted and pasted to make up the continent in much the same way as pieces of a jig-saw puzzle are put together. Heavy black lines were drawn to mark off the boundaries of the several countries in the picture.

Chapter II

THE RIBS OF OUR CONTINENT

MOTHERS like to watch their children grow. Mother Nature would seem to be no different from other mothers in this respect. She creates nothing fully formed. Flowers grow, trees grow, cattle grow, rivers grow and perhaps even worlds grow. Continents likewise develop in size and form. The growth of such huge beings is slow. Birthday parties, if held, would be thousands of years apart. Like other growing things, continents may become old, decay and pass away.

Everything which grows has some sort of foundation. The body of a boy is built about his bony skeleton. The ribs of a continent are its mountain ranges. Suppose we sit on the edge of an old, forgotten star and watch with Mother Nature the ribs of North America being formed.

Long, long ago, the place where North America now is was covered by ocean. Growing pains seized the earth. Volcanoes shook its sides and earthquakes changed its form. As a result of these and other disturbances, the sea bed in that part which is now the north-east quarter of our continent began to rise. Slowly a land, shaped like a great new moon with its horns to the north, emerged from the waters. It continued to lift until its central parts were as high as the loftiest mountains in the world to-day. Thus the earliest portion of our continent, perhaps the most ancient land in the world, is to be found in our own country, Canada. This first rib of North America we now call the Laurentian Highlands.

It was no small territory. A fast steamboat would have required three days and three nights to sail across the U-shaped mouth. To walk from side to side of one of its great arms would have taken a man many weeks. But

in those days there were neither steamboats nor men. Animals, trees and grass had yet to make an appearance. A huge, bare land it was, of rock and gravel.

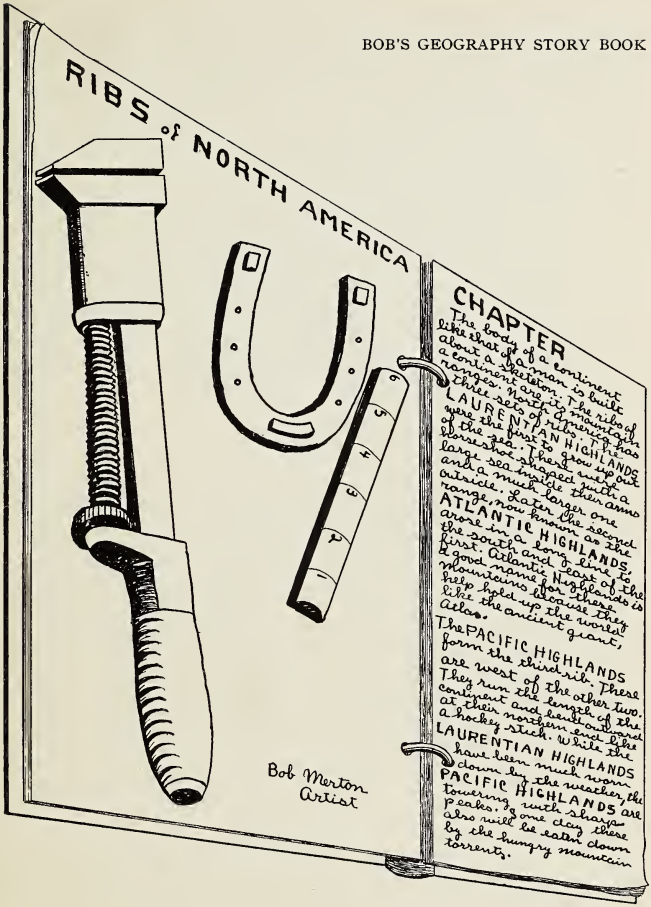
The sun shone, winds blew, clouds drifted, and rain fell. Indeed, it rained every day. Streams and rivers were always swollen and angry. Rushing violently toward the sea, they carved great valleys in the newly-formed land. In much the same way as a sloping, clay field is guttered by spring rains, the valley sides were gradually worn back into mountain peaks.

While the Laurentian Highlands were being cut into a maze of gorge and peak, another disturbance occurred in what is now the south-east quarter of North America. From the sea there arose a second new land, now known as the Atlantic Highlands. Partly it ran alongside and to the right of the Laurentian Highlands, and partly it extended as far again to the south below. To a boy, sitting on the edge of the old, forgotten star, it would have appeared as if a six-inch ruler had been placed beside and to the right of an upturned horseshoe.

The third and last rib of North America was really the result of more than one disturbance. Along that part which is now the western half of the continent, several great ridges arose side by side, the first to the west, the last to the east. They formed the uplands now known as the Pacific Highlands. From north to south this third rib stretched like a huge hockey stick, blade up, and pointed outward.

A horseshoe, a ruler and a large monkey-wrench could be arranged nicely to represent the three ribs of our continent. Between the Pacific Highlands on the west and the Laurentian and Atlantic Highlands on the east stretched all that remained of the Ancient Sea whose water dominion was being slowly but surely subdued by the three new land empires.

During all this long period of time, and for many thousand years after, the wind, the rain, the frost, the


RIBS of NORTH AMERICA
Bob Merton
Artist
CHAPTER
The body of a continent
like that of a man is built
about a skeleton. The ribs of
a continent are its mountain
ranges. Scientists tell us that
these sets of ribs, or mountains
LAURENTIAN HIGHLANDS
were the first to grow up out
of the sea. The first and
lowest rise, shaped much like
large sea shells, are worn
and rounded mountains
ATLANTIC HIGHLANDS
now. Later, higher ones
arose in a second line to
the south and east of the
first. Atlantic Highlands is
a good name for these
mountains now, because they
help hold up the world
like the ancient giant,
Atlas.
The PACIFIC HIGHLANDS
form the third rib. These
are west of the other two.
They run all the length of the
continent and, at the ends of
their north and south arms, curve
like a hockey stick. Like the
LAURENTIAN HIGHLANDS
have been much worn
down by the weather, the
PACIFIC HIGHLANDS are
towering, with sharp
peaks. Some day these
also will be eaten down
by the hungry mountain
torrents.

glaciers and the rivers gnawed like hungry rats at these uplands. The wind swept and the rain scoured the uplands clear of all sand and soil which had crumbled from weather-beaten stones. Water, seeping into crevices of the rock, froze and split to pieces its hard-hearted host. Glaciers, moving down mountainsides, tore up boulders and ground them to powder. Rivers, as we have seen, dug deep channels in the face of the highlands and, undermining their banks, constantly widened these valleys.

The peaks of the old Laurentian Highlands were cut to mere stumps. The middle-aged Atlantic Highlands were lowered and rounded. But the young Pacific Highlands still lifted rugged, towering summits to the sky, while the burst of the volcano and the shudder of the earthquake echo the tumult of their turbulent birth.

After the lesson story, the pupils helped Miss Goldenrule make a sand-table picture of the growing foundations of the continent. The blue painted bottom of the sand-table represented the ocean. Upon it the boys and girls built up with sand the Laurentian, Atlantic and Pacific Highlands. These names were written on slips of cardboard, inserted in the split ends of matches, and set up as sign-posts in their proper places. The teacher had them notice that the U-shaped Laurentian Highlands had a U rather than a W, in its spelling.

The sand-table used by Miss Goldenrule was not a cumbersome affair. The bottom was five-ply wood, forty inches by thirty inches. The sides and ends were made of inch lumber, one and a half inches deep, to which the bottom was firmly screwed. The bottom inside was painted a deep blue, and the whole given two coats of spar varnish. Such a sand-table requires but little sand. It can be readily viewed by an entire class, especially if the back edge be lifted by placing under it several books or blocks. When care is taken in the selection and arrangement of representative material a sand-table picture showing relative sizes and distances can be built up. Miss Goldenrule called this the art of sand-table perspective.

Miss Goldenrule chose one slate of the blackboard upon which to grow a map of North America. She knew that boys and

girls, as well as older people, like to watch things grow. With a brown crayon held flat against the board, she drew three broad lines, representing the ribs of the continent. The names of the highlands were neatly printed from left to right. To ask people to twist their heads and necks about while reading names upon a map is not polite.

Then a Geography Game was played. Five pupils came to the front and represented the shape and direction of the Laurentian Highlands, five more the Atlantic Highlands, and one line of six and a second of four, the Pacific Highlands.

In their Geography Story Books, Chapter II was properly entered in the Table of Contents on page I. On page 4, the story of "The Three Ribs of North America" was written. On page 3 the pupils drew a horseshoe, a ruler, and a monkey-wrench to illustrate the ideas in their story. This was more fun than drawing maps. And the pictures helped them to understand and remember better than "just lines" could have done.

Chapter III

THE BODY OF OUR CONTINENT

IT might be interesting to learn how the three great bare ribs of North America, lying far apart with vast seas between, were joined together and covered with flesh and skin to form one beautiful body.

After a heavy storm you may have noticed channels cut by rain rivulets in a driveway leading to a garage. The sidewalk in front of the drive was covered with pebbles, cinders and sand which had been washed down by the water. The sand, being light, was carried to the outer edge of the walk. The pebbles, being heavy, were left on the inner side next the drive. One might say that the driveway had, after a fashion, grown out over the sidewalk.

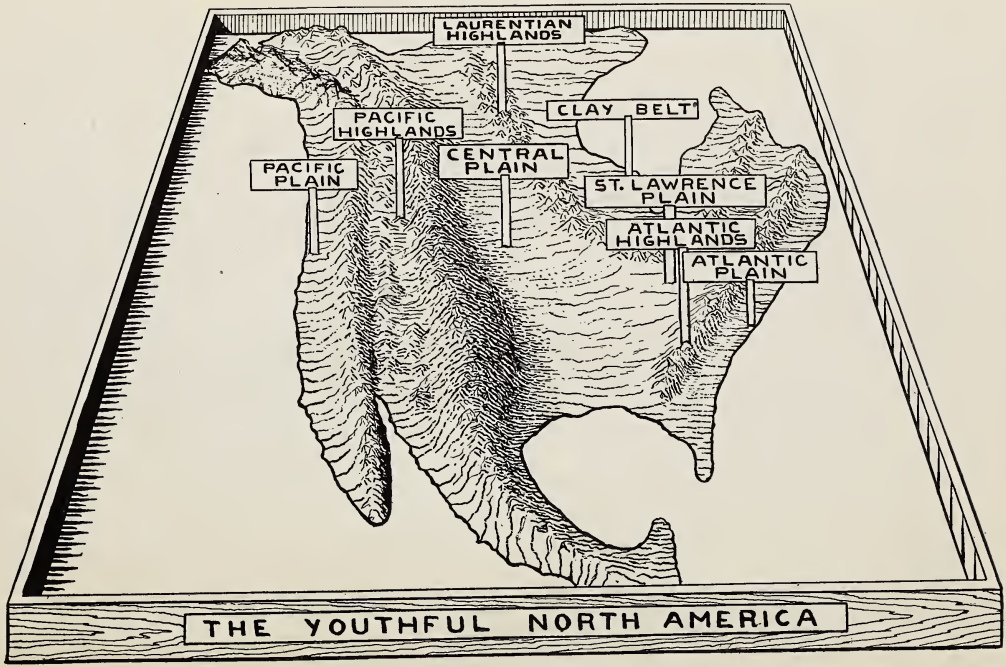
You have likely also seen the little delta of stones and sand which a stream, entering a pond, forms about its mouth. Soil and pebbles, captured on distant hillsides and hurried along by swift currents, have been used to build up a new land extending beyond the shore of the pond. Year after year the invaders push their way farther and farther out into the water. Some day the pond, completely conquered, will have become a marsh and later a splendid meadow land watered by a quiet, winding brook.

In somewhat similar fashion the body of North America was built up about its ribs. Rapid rivers of long ago gouged deep valleys in the uplands. Tributary streams cut the valley banks into mountain peaks. Pebbles, sand and clay, formed during this wearing process, were carried seaward and spread about river mouths. Thick moss tall ferns and water grass sprang up on the swampy delta lands. These plants, dying and decaying, left a rich, black mud. Trees, not unlike our pines but more shaggy and less beautiful, took root in this good soil. Everywhere about the feet of the highlands, plains were formed which

extended farther and farther out into the sea. Wider and ever wider they grew, crowding back the waters of the ocean, bridging shallow seas, and rounding out the body of our continent.

This growing process was aided by immense glaciers, which several times formed upon the chilly heights of the Laurentian and northern Pacific Highlands. Moving slowly toward the lowlands, these great masses of ice behaved like scraper men in a construction gang. They ploughed the mountainsides and gathered huge scraper-loads of earth and stone. Some of this material was deposited in the sea. Some was dumped in heaps upon the plain as the heat of the lowlands exhausted the strength of the gigantic carriers. All over southern Canada are to be found big, black boulders, ridges of clay, and hills of sand and gravel where the weary construction gangs abandoned their heavy loads.

The Ancient Sea between the Pacific Highlands on the west and the Laurentian and Atlantic Highlands on the east was slowly filled in from either side. But this construction work was by no means carried out evenly and regularly. If you will look at a depth picture of Hudson Bay you will notice that its western waters are very shallow, its central waters mediumly shallow and its eastern waters fairly deep. Probably a depth picture of the Ancient Sea would have presented a somewhat similar view. The very shallow portion bounding the Pacific Highlands was first filled in to form the high Alberta Plain. Its mediumly shallow part later became the less elevated Saskatchewan Plain. Its depths, which were the last to yield to the invading land forces, now make up the low Mackenzie-Manitoba-Mississippi Plain. Indeed the conquest hereabouts is not yet complete. The Great Bear, Slave, Athabasca and Manitoba lakes snuggling into the side of the Laurentian Highlands are the last remaining fortresses of the Ancient Sea, grimly holding out but being slowly conquered by their earthy foe.



CO-OPERATIVE SAND-TABLE PROJECT BY CLASS

This whole stretch of new land is now known as the Central Plain. It is in the form of three great steps, the Manitoba Plain, the Saskatchewan Plain and the Alberta Plain, rising from the east toward the west. Where gulfs, bays and lakes of the retreating Ancient Sea were slowly and quietly filled in, level areas of land, known as prairies, have been formed. Their top soil, made from the black muck of long-ago swamps, is so fertile that these prairies form some of the best farming districts in the world.

On the western side of the Pacific Highlands and on the eastern side of the Laurentian and the Atlantic Highlands there were formed in the same way two other land stretches, known as the Pacific Coast Plain and the Atlantic Coast Plain. Having been laid in deeper water and having been built up from one side only, each was, of course, much narrower than the Central Plain. Within the U of the Laurentian Highlands there was spread out the Hudson Bay Plain, usually known as the Great Clay Belt. Between the Laurentian and Atlantic Highlands the narrow St. Lawrence Plain was formed.

To a boy sitting on the edge of an old, forgotten star it would have seemed as though the children of Mother Nature were engaged in putting together a gigantic jig-saw puzzle. First he would have noticed the numerous pieces being piled in the form of three great highlands upon the table of the Ancient Sea. Then he would have seen the busy fingers of the rivers and the huge, clumsy fingers of the glaciers searching the uplands for proper parts and carrying these down to the level of the Ancient Sea to be fitted to place. Bit by bit the pieces were put together. Larger and larger grew the picture, smaller and smaller the area of the table yet to be filled. The puzzle, as will later be shown, has not yet been completed, but enough of the picture has been formed to give us a good idea of the final appearance of the layout.

In some such fashion was the beautiful body of North America built up about its three bare ribs. How the

body and features of the youthful continent were changed during the struggles of its more mature years will be told in the following chapter.

At the beginning of the story the sand-table picture of the ribs of North America, which had been put carefully away after the lesson of the previous day, was brought out. The pupils, pretending that their pencil points or their first fingers were rivers, cut the highlands into valleys and peaks, and spread the sand to represent the five plains, which were then named by means of sign-posts.

Upon the growing blackboard map of North America, Miss Goldenrule shaded in the plains with yellow crayon.

After properly entering Chapter III on page I of their Geography Story Book, the pupils told, on page 6, how the dry ribs of North America put on flesh and form. On page 5, a map of the newly-formed continent was drawn. Since a continent is a real thing, they drew its picture in the same way as Miss Goldenrule had taught them to draw the picture of a boy skating, or a girl skipping. Construction lines were first made, and then the form was shaded in. The construction lines in this picture were, of course, the ribs or highlands, and these were done with brown crayon. The plains were then shaded in with yellow crayon.

Chapter IV

A SILHOUETTE OF OUR CONTINENT

IN the previous chapter we saw how three bare mountain ribs were clothed with flesh and skin to form the beautiful body of North America. Since those babyhood days the continent has become a lusty youth. He still has a few billion tons of flesh to put on before he will have completed his growth. Two severe attacks of continent sickness have left his features lean and rather pronounced. Nevertheless he is a handsome chap whose photograph we should all like to keep in mind.

Possibly you have held your hand in the bright sunlight and made the shadow picture of a dog or a rabbit on the wall. Possibly you have played the guessing game in which one of a party stands between a light and a screen made of white tissue paper, while the remainder, on the other side of the screen, try to guess his name from the shadow-picture cast upon the paper. Perhaps you have turned the pages of an ancient family album and noticed the shadow picture of your great-great-grandfather, taken in those olden days when the photographer stood with his camera behind rather than in front of the person. Such shadow pictures are known as silhouettes. Suppose to-day we stand North America in the sunlight and take his silhouette.

Likely his twin sister, South America, will want also to come into the picture, since the two continents have gone through life hand in hand together. Though North America is lean and has pronounced features while his sister is a chubby-faced girl whose nose, mouth and chin are scarcely marked upon her face, one would judge them to be twins from their striking family resemblance. Both look like their cousin, Africa, but differ greatly from their

broad-faced, much-bewrinkled uncle, Eurasia, and from their other cousin, the bullet-headed Australia.

Since continents are awkward things to move about, we may perhaps use a wall map to help us trace our silhouette. Looking at the northern part you will notice between the arms of the U-shaped Laurentian Highlands a great body of water. It is called Hudson Bay because it was discovered by an English explorer of that name. No doubt you have read the story of how Henry Hudson set out to find a northern waterway to China. He sailed up the Atlantic coast and entered Hudson Strait, thinking he had found the route which he sought. But his sailors, becoming frightened by the immense packs of icebergs in that region, mutinied. Henry and his young son were set adrift in a small boat on Hudson Bay whence they never returned. But people recall to mind the brave sailor who was the first white man to see this vast expanse of water when they speak of the bay which they have named in his honour.

Hudson Bay is that part of the Ancient Sea which was entrapped by the rising arms of the Laurentian Highlands. More than half the original gulf has been crowded out by the building up of a Clay Belt Plain about the inner curve of the mountains. To the south but a small portion, named James Bay, remains. In fact, because of washed-in soil, both bays are so shallow that only one port, Churchill, is to be found on the western shore, whose harbour is open to vessels during low tide. The filling-in process still continues. Some day, when North America is fully grown, the U-shaped arms of the Laurentian Highlands will encircle a rich, level plain.

Looking at the southern part of the wall map, you will notice another portion of the Ancient Sea as yet unfilled. It is called the Gulf of Mexico. The Gulf of Mexico is shaped like a wide-open mouth, the Peninsula of Florida forming the upper lip and the Peninsula of Yucatan the lower. Like Hudson and James bays, this vast expanse

of water is being slowly conquered. Year after year, rivers from the mountains carry down their loads of mud. Year after year the Great Central Plain creeps farther and farther out into the gulf. Some day when North America has grown man-sized, waves of grass and grain instead of waves of water will roll across this huge area.

North America is thin not only because of youth but because he has suffered more than once from severe attacks of continent sickness. When continents grow ill, their ribs become weak and tend to give way.

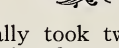
Once the upper end of the great Atlantic Highland rib thus suffered. Slowly it sank, taking with it the northern part of the Atlantic Coast Plain. The ocean rolled inland, drowning the mouth of the St. Lawrence River, and flooding the country thereabout. Thus was formed in the coast line another great hollow, now known as the Gulf of St. Lawrence. Jacques Cartier, the French explorer, gave it this name, because on a holiday, called St. Lawrence Day, he was sailing in that vicinity. However, certain of the loftier portions of the north Atlantic Highlands were not completely flooded, but remained above water as islands. Newfoundland, Prince Edward and Cape Breton are three such islands Nova Scotia came near to being a fourth, but a narrow isthmus saved it for the mainland, by making of it a peninsula.

Not only do the scars in the coast line hereabout tell us that once such a sickness occurred, but the fact that the people of Nova Scotia mine coal out under the sea makes us certain. Beds of peat, from which coal originates, can be formed only upon a swampy plain. Hence the sea bed about Nova Scotia must have been at one time part of the Atlantic Coast Plain.

The older and more western part of the Pacific Highlands likewise suffered from an attack of continent sickness. Here the outer rib grew weak, gave way, and sank into the sea, taking with it the whole Pacific Coast Plain, save only those higher parts now forming Vancouver, Queen

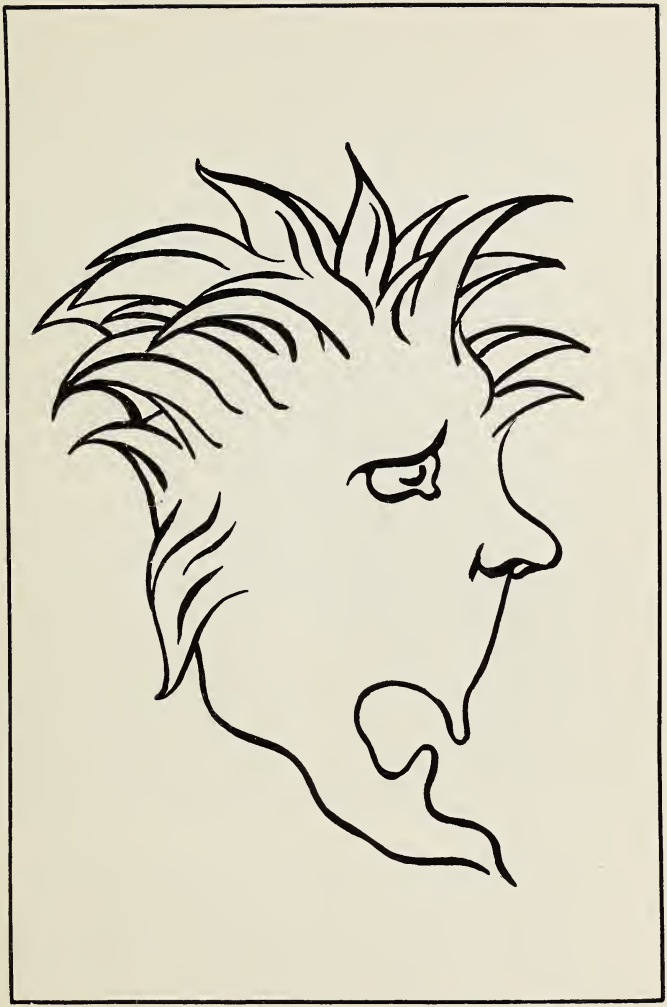
Charlotte and other islands, together with the Peninsula of Lower California. The Peninsula of Lower California hangs at the back of our continent's head like the lobe of an ear. The narrow Gulf of California is the space between this lobe and the head. The Franklin Islands to the north, and the West Indies to the east, were likely formed in a similar manner.

Look at the shadow picture which has been formed. The silhouette faces east. The Gulf of Mexico is its open mouth; the peninsulas, Florida and Yucatan, its upper and lower lips. Hudson Bay is a deep eye-socket, and Hudson Strait the dip in the nose. The nose, of course, is Labrador, whose two nostrils, Belle Isle Strait and Cabot Strait, open into the Gulf of St. Lawrence. The Franklin Islands are its hair and the West Indies its moustache. We have already noticed how the ear lobe hangs as the Peninsula of Lower California. Do you not think the silhouette of our continent is at least as good-looking as the man in the moon?



Miss Goldenrule really took two periods in teaching this story. She had an idea that five or six new names were all that her grade could learn well during one lesson. Bob, Mary and the other boys and girls were most interested in discovering that continents are fat or thin, healthy or sickly, good-looking or homely, just like people. Nevertheless, they studied better when not overcrowded with new work.

The pupils made the bays and the islands mentioned in the two lessons upon the same sand-table picture that had been used in the second and third lessons. Each was named by means of a sign-post. Miss Goldenrule also marked each upon the growing blackboard map of North America. In their Geography Story Books the story of "The Silhouette of North America" was written on page 8 as one chapter. On page 7 a mass drawing of the completed continent was made in crayon, brown for the ribs and for the islands which were once parts of ribs, yellow for the plains, and blue for the coast waters. All the new names were printed neatly upon the maps, from left to right. Bob's chum, Bill, who was brighter with his pencil than with his tongue, drew a silhouette of North America to illustrate his story.



SILHOUETTE OF NORTH AMERICA DRAWN BY BILL

Chapter V

THE MISSISSIPPI RIVER SYSTEM

UP street is a double house built in such fashion that the opposite eaves meet. Rain rivulets trickle down each of the inner roofs and run off in a large stream through the gutter between. They also flow down each of the outer roofs and leap from the eaves to the ground. During a storm this double house helps one understand how our continent is drained.

The mountain ribs of a continent form roof ridges known as divides. The slanting roof sides are called watersheds. Rivers are the rain rivulets of continents. They flow down watersheds, digging out soil and gnawing away rock to form river valleys. At the feet of their watersheds streams may unite to form a large river flowing through the gutter between opposite highlands. The whole area of land whose rainfall runs into one gutter is called a river basin. The main river together with all its branches, great and small, is known as a river system.

Instead of two, North America has been built up of three main house-tops joined together. Its three huge ribs, the Laurentian Highlands on the north-east, the Atlantic Highlands on the south-east and the Pacific Highlands on the west form three great roof ridges. These divide the land into river basins, the largest of which is the Mississippi.

Face the north, and hold your hands, backs up, thumbs out, finger-nails touching, and knuckles uplifted to form a V. This gives you a picture of North America viewed from the south. The right-hand knuckle row is the Atlantic Highlands Divide. The left-hand knuckle row is the Pacific Highlands Divide. Depressions between fingers are the river valleys of the two inner watersheds. The

winding line between touching finger-joints is the gutter into which these rivers flow. The gutter is the Mississippi River. The space between thumbs is the Gulf of Mexico into which this gutter empties. The area from knuckle ridge to knuckle ridge is the Mississippi River Basin.

Mississippi is an Indian name meaning "Father of Waters." La Salle, the first white man to explore its length, required two months to make a canoe trip from near its source to its mouth.

From the western watershed many tributaries flow into the Mississippi. The longest is the Missouri. This river rises amid the lofty heights of the Pacific Highlands near the Canadian border. In fact, some of its headwaters have their source in Canada. At first the pathway of the Missouri is steep, its current rapid, its valley deep and narrow. On the rough land thereabouts people pasture sheep. But on the rich Central Plain, where the Missouri enters the midpoint of the Mississippi, corn-growing and cattle-farming are carried on.

Likewise from the eastern watershed many tributaries enter the Mississippi. The largest of these is the Ohio. The Atlantic Highlands, amid which the Ohio has its source, are not so lofty as the Pacific Highlands. As a result, the headwaters of the Ohio are less swift and its valleys less deep than those of the Missouri. Nevertheless, the Ohio is glad to leave the dark, coal-mined hills of its birthplace and flow quietly through the rich corn and cattle country of the Central Plain until it enters the Mississippi a short distance below the mouth of the Missouri.

The course of the Mississippi itself lies wholly within the Central Plain where it winds a crooked way like a great snake between eastern and western highlands. One might picture the land through which it flows as a happy old farmer whose head is a wheat field, whose body a corn and cattle farm and whose legs are a cotton plantation.

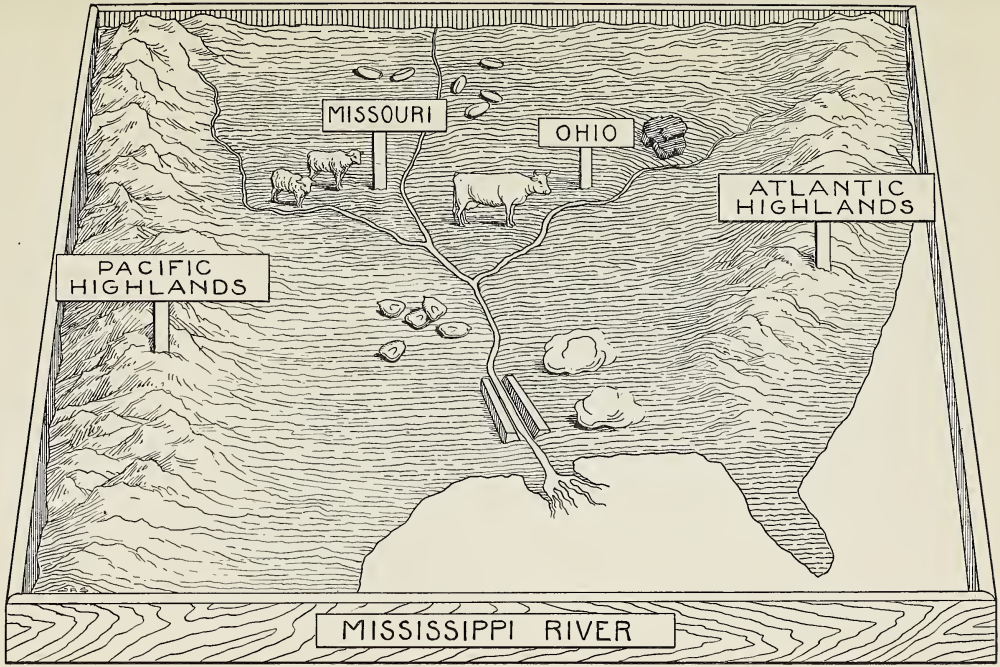
Because the Mississippi has an immense river basin, its

many tributaries pour huge volumes of water into this great gutter. The plain through which the river runs is almost level. Hence the current is slow, the banks low and the channel wide rather than deep. Indeed, so shallow is the Mississippi that steam boats which carry corn, cattle and cotton down to the mouth have to be built with flat bottoms. Even then a boat sometimes runs upon one of the many sand-bars scattered throughout the river's course.

In early summer snows upon the Atlantic and the Pacific Highlands melt rapidly. The headwaters of the Missouri and Ohio become muddy torrents. Their valleys, however, are deep and their banks steep. Though the waters pile up they do not spread, and the swift current hurries them down to the plain. Here the lazy old Mississippi cannot handle the work suddenly thrust upon it. Over its low banks the angry waters rush, flooding the corn lands of the centre and the cotton lands of the south. Sometimes an area as large as that of southern Ontario is turned into a great yellow lake. The inhabitants are forced to desert their homes and flee in boats to the nearest highland. Houses and barns are washed away. Cattle, bawling plaintively amid wreckage and uprooted trees, are borne along by the eddying current. Finally the river returns to its natural level, leaving a layer of black mud over all the wasted countryside.

People living in these parts try to control floods by building dikes, called levees, upon low river banks. Brush is piled along the river side and filled in with earth and stone. Sometimes the top of the levee is finished off with layers of sand bags.

The Mississippi itself is engaged in the task of building. The mud carried down by the swiftly-flowing tributaries tends to settle in the quiet waters of the lower river. Great mud banks, called deltas, are being built up about the mouth. These make excellent farming lands, but increase rather than lessen the danger of floods since they dam back the water's flow.



CO-OPERATIVE SAND-TABLE PROJECT BY CLASS

While the story was being told, three strips of blue paper were added to the sand-table picture of North America to represent the Mississippi and its two chief tributaries. Three sign-posts, each bearing the name of a river, were put in place. The wheat, corn, and cotton lands were marked by grains of wheat, grains of corn and cotton batting. At the source of the Ohio was placed a piece of coal, at the source of the Missouri a sheep "cut-out," and between the mouths of these two tributaries, a cow "cut-out." Plasticine levees were built along the banks of the lower Mississippi, and a sand delta was pushed out about its mouth.

Upon the growing blackboard map of North America, Miss Goldenrule marked with blue crayon the Mississippi River and its two chief branches. To indicate the scenery along the river banks the boys and girls fastened to the board, with plasticine, grains of wheat and corn, pictures of sheep and cattle, a tuft of cotton batting and a lump of coal.

Then they played a Geography Game. Five pupils formed a line to represent the Mississippi, three the Missouri, and two the Ohio. Each pupil was called upon in turn to describe the section of the river which he represented. Thus, the five Mississippi players described, in turn, the wheat farms, the corn and cattle farms, the levees, the cotton plantations, and the delta.

Chapter V was properly entered on page I of their Geography Story Books, the story of the Mississippi was written on page 10, while on page 9 a drawing of the Mississippi and its tributaries was made with blue crayon. "Delta," "Levees," and the names of the rivers were printed in their proper places. The products of the surrounding regions were indicated by drawings.

Chapter VI

THE MACKENZIE RIVER SYSTEM

IN a previous chapter we discovered how the mighty Mississippi River carries to the Gulf of Mexico the drainage water from the southern half of the basin lying between the Pacific Highlands on the west and the Laurentian and Atlantic Highlands on the east. An old Indian tale tells how the northern half of this basin is drained.

Long, long ago, so runs the story, two boisterous rivers were born high upon the snowy slopes of the mid-Pacific Highlands. The birthplace of the young Athabasca River was in the vicinity of the present Jasper National Park. His twin brother, the Peace River, first saw the light of day from a bed of snow somewhat farther north.

It is a curious fact that all young rivers come into life feeling desperately homesick. Human babies are usually born at home and later adventure forth into the world. But river babies are always born as far from home as their cloud mothers can carry them. Consequently, their first awakening cry is not for food but shelter.

So on their very first birthday the Peace and Athabasca rivers started on a mad race toward their home in the Arctic Ocean. Neither was acquainted with the way, since neither had ever seen the Arctic Ocean. However, they had been told by the North Wind that their home lay to the north, and that its waters had a salty flavour and a cool, comfortable temperature like the snow fields of their birthplace.

"I'll beat you to it!" yelled the noisy young Peace River as he tumbled over a dizzy precipice.

"Like fun you will!" shouted the impudent young Athabasca River as he plunged down a foaming cascade.

Noisily the two raced on, wakening the whole Pacific Highlands with their clamour.

Mother Nature, chancing to hear the racket, said to herself, "I shall have to put difficulties in the way of these rude youngsters and so teach them better manners."

Now it happened that when parts of the ocean floor had crumpled up to form the Laurentian Highlands, other parts, just to the west, had crumpled down, making deep holes in the bed of the Ancient Sea. If you were to crush a piece of cloth, parts of it would be crumpled up and parts crumpled down in much the same fashion. The depths formed by the crumpled-down portions of the ocean floor were the last parts of the Ancient Sea to be filled with earth washed down from the highlands. In fact, the fill-in is not yet complete. Three large lakes, snuggling into the western face of the Laurentian Highlands, are the remains of three such sink-holes.

Mother Nature, looking about the country for difficulties, noticed these three lakes. Nodding her wise old head, she muttered, "We shall see what we shall see!"

Leaping from rock to rock, the young Athabasca River raced down the mountainside at such a rate that he kicked out a deep valley through the coal country at the foot of the highlands. Nowadays, farmers, living near the river, load their wagons with winter fuel dug from coal seams in the side of the banks.

Then he sped northward through thousands of acres of tar-sand, a substance which looks like the asphalt used to pave our city streets. Indeed, some day our Canadian roads may be paved with Athabasca tar-sand.

Meanwhile, the young Peace River was behaving himself in a similar rude fashion. After racing down the rocky watershed, he, too, kicked out a valley through the plain at the foot of the highlands. This plain is now known as the Peace River District, and is a famous farming country.

Perhaps the Peace River lingered here a while, since the valley which he made is much broader than that kicked

out by his twin brother. Perhaps the Athabasca River, having tasted salt in the land to the north of the tar-sands region, where now stands Fort McMurray, imagined that he was nearing the end of his search and rushed ahead to beat his brother. When he saw Athabasca Lake, the first of the three sink-hole lakes which had caused Mother Nature to nod her head, naturally he thought himself within sight of his Arctic Ocean home. Blindly he plunged through the doorway.

"Pooh!" he spluttered. "This water is as warm as a swamp and as tasteless as a dewdrop."

The Peace River, who had lingered by the way, now drew near. At first he wanted to laugh at the puckered face of his brother, but, seeing his disappointment, said, "I think it would be wiser were we to travel together and help one another in our search."

The Athabasca River was only too glad to accept this advice. Leaving the warm, tasteless waters of Lake Athabasca, he joined his brother and the two travelled northward in one stream, now known as the Slave River.

Mother Nature nodded her wise old head and remarked, "They have begun to co-operate. Co-operation is the first lesson all young rivers must learn."

Since the Slave River was but a combination of the Peace and Athabasca rivers, it likewise was eager to find its way home. Northward it flowed mile after mile. Again the ground took on a salty taste, and soon a broad sheet of water opened to view.

"Surely, this is the Arctic Ocean!" shouted the Slave River, and without pausing to investigate, it dashed through the big front door.

The water into which it entered, however, proved warm and tasteless. It was only another sink-hole lake, now known as the Great Slave Lake.

So violently had the Slave River rushed through the front door, that it was far within the Great Slave Lake

before discovering its mistake. After a prolonged search, it noticed a side door to the west, and crept humbly out.

"We must be cautious and not rush into places," murmured the two brother rivers within the stream.

"Aha!" said Mother Nature. "They have mastered their second lesson. Young rivers must learn to be cautious."

Once again the stream turned northward and renewed its journey. The river leaving Great Slave Lake is now called the Mackenzie River, after the name of the man who first explored it.

Mile after mile after mile the Mackenzie River journeyed northward. Another large stream, now known as the Liard River, was encountered. The Liard River likewise had started from the snow-fields of the Pacific Highlands in search of the Arctic Ocean. When asked to co-operate, he gladly accepted the invitation and joined the Mackenzie River.

After many more days' travel the Mackenzie River came to a country where the soil once more had a salty, oily taste. A body of water was seen to the right.

"That surely is the Arctic Ocean," whispered the Liard River to the two brother rivers.

"I think we should be cautious," they replied.

Presently a fourth river, which came from the direction of the large body of water, was encountered.

"Is that not the Arctic Ocean?" inquired the Liard River of the stranger.

"Oh, no! That is Great Bear Lake, whose black rocks are heavy with silver and radium ore, and I am the Bear River," replied the newcomer. "I myself am in search of the Arctic Ocean."

"Will you not co-operate with us?" asked the three companion rivers.

"Very glad to, I am sure," answered the Bear River.

On and on and on flowed the Mackenzie River. The

four companion rivers began to weary. Some wished to turn back.

"That would never, never do," stoutly affirmed the Athabasca River, who had travelled the farthest. "We must be courageous."

Mother Nature again nodded her head. "They know their third lesson," she said. "Human children have to learn the three R's, reading, writing and 'rithmetic. River children just learn the three C's, co-operation, caution and courage. I wonder why human children are not taught the three C's?"

Presently a huge body of water was seen in the distance. A lovely cool breeze began to fan the tired current. But the four companion rivers had learned well their second lesson. Instead of recklessly plunging into the strange water before them, they divided themselves into many small streams, and set out cautiously to explore the region.

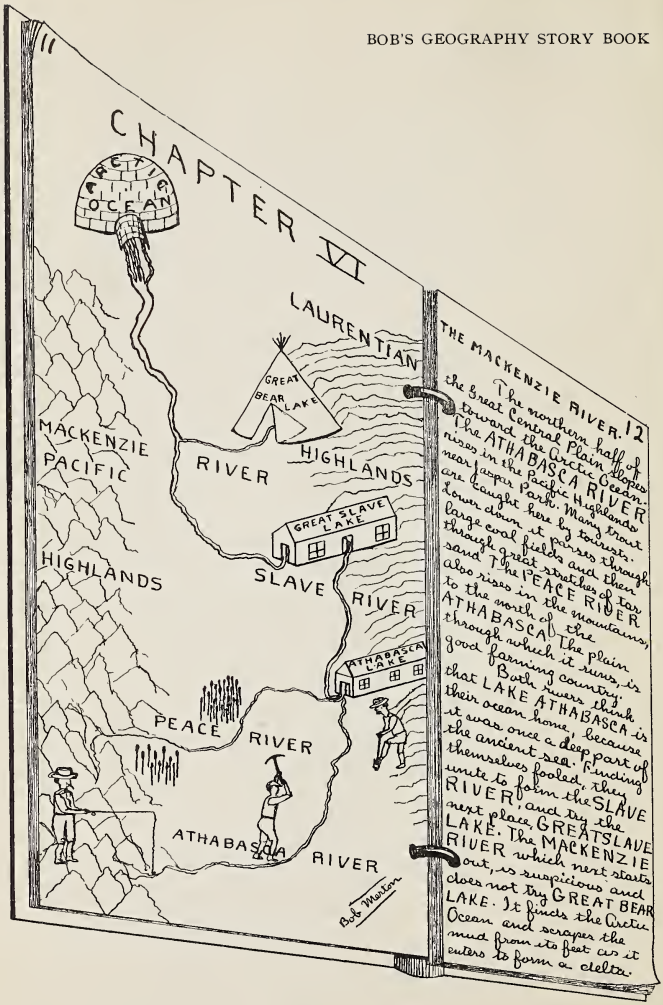
After a long, careful examination the streams came one by one to the shore. The water had a delicious, salty flavour. Green icebergs floated upon its waves.

"Home at last!" gleefully exclaimed the four companion rivers.

But before entering their lovely home, they carefully scraped the mud of the long journey from their feet. To this day may be seen at the mouth of the Mackenzie River large mud islands formed from these scrapings. They are called the Mackenzie River Delta.

Upon the growing blackboard map, Miss Goldenrule drew with blue crayon the rivers and lakes of the Mackenzie River System. The name of each river and lake was neatly printed from left to right. Objects fixed with plasticine to the blackboard indicated the scenery along these waterways.

A Geography Game was then played. The east wall was to represent the Laurentian Highlands. Three groups of three pupils each circled hands and formed three lakes next this wall.


11
CHAPTER VI
ARCTIC OCEAN
LAURENTIAN HIGHLANDS
GREAT BEAR LAKE
MACKENZIE RIVER
PACIFIC
HIGHLANDS
GREAT SLAVE LAKE
SLAVE RIVER
ATHABASCA LAKE
PEACE RIVER
ATHABASCA RIVER
Bob Morton
THE MACKENZIE RIVER. 12
The northern half of the Great Central Plain slopes toward the Arctic Ocean. The ATHABASCA RIVER rises in the Pacific Highlands near Jasper Park. Many trout are caught here by tourists. Down it passes through large coal fields and then through great stretches of tar sand. The PEACE RIVER also rises in the mountains, to the north of the ATHABASCA. The plain through which it runs is good farming country. But rivers think that LAKE ATHABASCA is their ocean home, because it was once a deep part of the ancient sea. Finding themselves fooled, they unite to form the SLAVE RIVER and try the next place GREAT SLAVE LAKE. The MACKENZIE RIVER which next starts out, is suspicious and does not try GREAT BEAR LAKE. It finds the Arctic Ocean and scrapes the mud from its feet as it enters to form a delta.

Six pupils with outstretched arms represented the Athabasca, Peace, Slave, Mackenzie, Liard and Bear rivers. The actors were called upon in turn to describe the parts they played.

The boys and girls drew a picture of the river upon page 11 of their Geography Story Books. Each lake was drawn in the form of a house. Great Slave Lake had two doors, while the Athabasca and Great Bear Lakes had but one each. Small drawings indicated the scenery along the way. On page 12 was written the story of the Mackenzie River.

Miss Goldenrule told the pupils that the class of the previous year had written and acted a play founded on this old Indian tale of the Mackenzie River. Mary was permitted to read aloud the production, which proved so interesting that the class asked if they might repeat the performance. The teacher remarked that she had in her desk another play which dealt with the river system next to be studied, and suggested that the class produce the "Nelson River" rather than the "Mackenzie River" play, provided upon examination the former did not appear too difficult.

Chapter VII

THE NELSON RIVER SYSTEM

MISS GOLDENRULE'S class studied the Nelson River System by putting on the following play. Two stage managers, ten players, ten understudies, five designers and two announcers were selected. The managers arranged the scenes in accordance with the map in their geography text. The players and understudies learned the parts given them. The designers looked after the stage settings and the making of placards both for the scenery and for the players. The announcers drew and named on the blackboard each body of water as its representative appeared for the first time on the stage.

Prologue

School Spirit (*appropriately robed and bearing two flags, one the national emblem and the other the map of Canada, appears on centre stage*)—History and Geography are sister and brother subjects, though their relationship appears at times to be a closely-kept family secret. Geography is regarded by many as a dry, matter-of-fact old chap, quite lacking the vivacious spirit and romantic turn of mind so charming in the lady. However, the tale which we present would go to show that his youth, at least, was marked by adventures as knightly as any recorded of King Arthur's Court.

Our story opens at a time long, long ago, when the waters of that part of the Central Plain now drained by the North and South Saskatchewan Rivers and the Manitoba lakes, instead of emptying into Hudson Bay, flowed southward through the Red River into the Mississippi, and so to the Gulf of Mexico. The story goes on to tell how the bold young Nelson River dug a secret channel back

through the crumbling walls of the old Laurentian Fortress, rescued a fair lady in distress and won for his tribe a richly-dowered princess and for himself a bride.

ACT 1

SCENE—*On a bench along the west wall placarded "Pacific Highlands," stand two Indian chiefs, the* NORTH SASKATCHEWAN RIVER *and the* SOUTH SASKATCHEWAN RIVER. *As the act opens they leap from the bench and proceed slowly and at some distance apart toward their sister,* PRINCESS LAKE WINNIPEG, *who, holding a small pail of water, stands a little to the east of centre stage.*

N.S.R.—How goes the journey, Brother of the South?

S.S.R.—'Tis an easy trail across the plains, O Brother of the North. But an easy trail makes lazy travelling.

N.S.R.—Ug! Different the days we raced the eastern watersheds of the Pacific Highlands.

S.S.R.—I was then a brave indeed! White foam feathers decked my locks, and a thousand lofty crags echoed the war-cries of my waterfalls. Now my feet drag like those of an ancient squaw.

N.S.R.—Pray join me, brother. The north way may prove more to your liking.

S.S.R.—That I will gladly. Not a tree nor a hill have I seen for a week.

[*Moves northward and the two proceed side by side.*

Ug! This is better. More like the Land of the Foothills.

N.S.R.—Think you our sister, Princess Lake Winnipeg, will be in her wigwam?

S.S.R.—She and Lady Lake of the Woods may be at the camp of the Mississippis.

N.S.R.—Lady Lake of the Woods! And who is she?

S.S.R.—A short, plump girl who lives to the south and east of Win's camp. Our cousin, Chief Winnipeg River, brings her in his birchbark canoe down the Trail of Many Rapids to Win's teepee. The three then go with Red River

and his blood brother, Assiniboine River, to the land of the Mississippis.

N.S.R.—Why do they visit the Mississippis? I like not these soft southern people.

S.S.R.—Red and Assiniboine had once a war-canoe. Long ago the five paddled south on a hunting trip and were captured by the Mississippi tribes, whose chief released them only on condition that for ever after they pay daily tribute.

N.S.R.—Bones of my ancestors! And are there none—

S.S.R.—Soft! Our sister!

L.W.—Hello, North! Hello, South! It is good to see my big chief brothers again.

S.S.R. (*Taking her one hand*)—Greetings, O Sister Cheerful as the Warm Chinooks!

N.S.R. (*Taking her other hand*)—Greetings, O Slender as the Graceful Willow's Stem! (*Pointing to the water-pail.*) But why the heavy load?

L.W.—'Tis tribute. Day after day I am compelled to quench the hot thirst of the Mississippi Chief with cool, sweet water from our northern springs.

N.S.R.—Then what South told is true. This vile outrage——

L.W.—Sh! Here come my companions in misery.

(Chief Winnipeg River *and* Lady Lake of the Woods *approach from the south-east.*)

Lady Lake of the Woods, my brothers, Chief North Saskatchewan River and Chief South Saskatchewan River. You remember your cousins from the Land of the Setting Sun, Chief Winnipeg River?

(*The brothers bow to the lady and shake hands with their cousin.*)

Had you a pleasant trip to-day, Lady Lake of the Woods?

L. of W.—I should say not. That Trail of the Many Rapids is the *worst* place for tumbles and bumps. Have

you your tribute ready? Red and his blood-brother, Assiniboine, will be waiting us.

L.W.—Yes! And a bitter task has it been collecting the tax from my sunny prairie brooks and my bubbling mountain springs.

N. AND S.S.R.—May we not carry it for you, sister?

L.W.—If you will. I am so weary.

N.S.R.—Stay you at home to-day and rest. We shall go in your stead. I want to meet this Mississippi Chief and——

L.W.—Do nothing rash! His tribe is most powerful. Promise me—nothing rash!

(*Leaving* LAKE WINNIPEG, *the four proceed southward until they meet* RED RIVER *and* ASSINIBOINE RIVER *coming from the south and west, whereupon the six move off the scene.*)

ACT 2

SCENE—LAKE WINNIPEG *west-centre stage.* CHIEF NELSON RIVER *north-east stage, behind a barricade of chairs placarded "Laurentian Highlands."*

L.W. (*Aside*)—Why is my lot so hard? Why have——

N.R.—Hello, Princess Lake Winnipeg, hello!

L.W.—Who calls?

N.R. (*Looking over the barricade*)—I am Chief Nelson River, son of the great Chief Hudson Bay. Many long moons from this the ancient fortress which divides our lands have I gazed upon your slender loveliness, and thought me of my lonely wigwam.

L.W.—Gazing will not give it company.

N.R.—Long have I wished——

L.W.—So do our squaws. Sit by their teepee fires and wish and wish!

N.R.—Dear Princess, may——

L.W.—I was but jesting. Who am I to jest? Seek out another princess for your wife, one who is not bound in slavery.

N.R.—A slave! You?

L.W.—Even now my companions in sorrow and my two brothers do bear my tribute to the Mississippi Chief and to his father, the great Gulf of Mexico.

N.R.—Then I will rescue you.

L.W.—Rescue? You, a mere boy! The Mississippi is a mighty chief, his tribe a powerful people. His father, the gigantic Gulf of Mexico, could swallow you in one sip.

N.R.—My father, Big Chief Hudson Bay, has fear of none. He pow-wows with the polar blasts, makes magic with the northern lights. His warriors, the iceberg braves——

L.W.—Big talk! Behind the fortress of your old Laurentian Heights you chatter like a squaw.

N.R.—Then come I down to prove my words. And I shall make a way through these old crumbling stones to bear you back.

(NELSON RIVER *breaks a narrow way through the Laurentian barricade.* LAKE WINNIPEG *retreats as he comes through.*)

L.W.—Stay back! Stay back! You face great danger coming here.

N.W.—The freedom of the Northland waits your step.

L.W.—I cannot leave my brothers and my friends.

N.R.—My father's lodge has room for all.

L.W.—Wait until the others come.

N.R.—May we not look the future with one glance?

(*He leads* LAKE WINNIPEG *through the narrow passage and the two disappear behind the barricade.*)

ACT 3

SCENE—*As at the end of Act 2. The tribute party approach from the south pursued at a distance by the waddling* MISSISSIPPI CHIEF.

L. OF W.—Why did you vex him, North Saskatchewan.

N.S.R.—He angered me with his loud talk.

L. OF W.—Now he will come and drain our country dry.

S.S.R.—Where is our sister? She must be warned.

ALL (*Shouting*)—Princess Lake Winnipeg!

(LAKE WINNIPEG *and* NELSON RIVER *appear at the barricade.* NELSON RIVER *comes through the gap.*)

N.R.—Single file! Forward through the breach!

(*The tribute party squeeze one by one through the opening followed by* NELSON RIVER.)

W.R.—Who is our rescuer, cousin?

N. AND S.S.R.—Yes, dear sister, who is this brave young chief?

L.W.—This is Chief Nelson River, son of Big Chief Hudson Bay. With his own hands he broke a way through these Laurentian Hills for our escape. From now on I go with my cool sweet streams to the great free Land of the North. Who comes with me?

ALL—That do we all!

(*The* MISSISSIPPI CHIEF *struggles to enter the opening but is prevented by his size. Shakes his fist.*)

M.C.—Ditchwater of the North, I shall return and drag you south in chains!

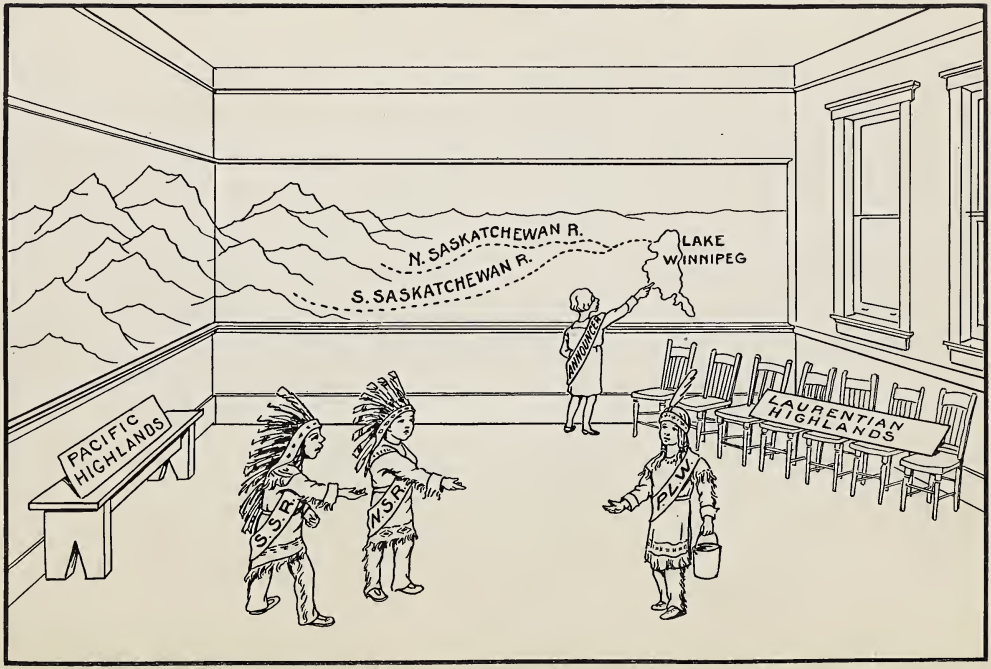
N.R.—By then I shall be a Big Chief, bright with gold and armoured with copper from my rocks. Come if you dare!

R. AND A.R.—By then we shall have built a great city named in honour of our Princess dear. Come if you dare!

W.R.—By then the thunder from my waterfalls will shoot its lightnings over all the land. Come if you dare!

N. AND S.S.R.—By then a host of sturdy braves will camp their wigwams thick as stars about our banks. Come if you dare!

(MISSISSIPPI CHIEF *departs scowling. The others line the barricade and sing the first stanza of "Men of the North."*)



SCENE FROM THE NELSON RIVER PLAY

Chapter VIII

THE ST. LAWRENCE RIVER SYSTEM

NIGANIS and his grandson, who goes to the white man's school in Quebec City, sat on a cliff and watched the tide creep up the St. Lawrence River until the shoals far below their feet were covered by lapping waves.

"The hunting dogs of the Mighty-Water Spirit do not venture far inland since the day they fought Ginikaje, the storm bird with the cruel beak and rustling wings," grunted the old Indian.

"What hunting dogs, grandfather?" asked the boy.

"Miwe and Giwe, dogs of the Mighty-Water Spirit whose lodge is in the depth of the vast Atlantic Ocean. Twice each day they prowl the shores and run up the rivers of the long sea-coast in search of game for their master's table. Miwe, whom white men call the flood tide, is of a bold and venturesome breed. Since the days of puppyhood he has longed to roam the vast inland beyond call of his master's booming voice. Giwe, the ebb tide, is more cautious. Willingly he turns from the chase to curl beside the teepee in the quiet depths of the sea."

"What do they hunt, grandfather?" inquired the boy, cupping his chin with his hands and stretching his legs in an easy position along the rocks.

"Little enough now," sighed the old chief bitterly. "When the butcher picks up the halter strap the hunter lays down the bow. Time has dealt hardly alike with both Indian and tides.

"But ages and ages ago, when the stars were young and the hunting dogs yet in first youth, whales and porpoises roamed the salt sea-marsh like droves of mighty elephants. Land animals were they then. Land animals

would they be now but that the Mighty-Water Spirit, taking on the white man's way, captured and tamed them to herd like cattle in his ocean fields. Though slavery has made them ape the limbs of silly fish, the beasts yet sniff air through their nostrils and bear young in flesh and blood.

"Then also the moons ranged nearer the side of their mother earth. Great innocent calves were the moons, fathered by the sun and born one every month by their earthly dam. Enormous round bodies enabled them to float high in the air like balloons. Their flesh, especially during August, was of a yellow, cheesy colour and had a mellow, cheesy flavour due to the milk they drank along the Milky Way. Frequently on calm evenings they descended to earth and might be seen nibbling seaweed in the depth of some quiet bay.

"Then, as now, the Mighty-Water Spirit dined twice a day. At noon he favoured a dish of stewed whale or porpoise served with jelly-fish. For his midnight feast he was particularly fond of moon calf roasted whole. So he and his dogs hunted whales and porpoises by day and moon calves by night. Since Miwe, the flood tide, ever raced ahead, while Giwe, the ebb tide, ever loitered behind, the Mighty-Water Spirit harnessed the dogs together for the chase. He further controlled their pace by means of a long leash, one end of which was fastened to the harness strap while the other was held in his left hand."

"Tell me how the dogs fought Ginikaje, the storm bird with the cruel beak and rustling wings," pleaded the youngster as his grandfather lapsed into long silence.

"To what end?" sighed the old chief. "The young man to-day lists to the tick of the second, but cannot hark the hour; counts wave-strewn pebbles, but never beholds the sea."

"Please, grandfather!" persisted the boy.

"Well, then, if you must know!" continued the old

Indian. "Ginikaje was an ancient enemy of the Mighty-Water Spirit. Wide was the spread of its powerful wings, terrible the thrust of its cruel beak. The head which carried the beak was even larger than the body. Since, however, the bird neither walked on land nor swam in water, it had but one leg, the foot of which was furnished with a single claw.

"Ginikaje found mischievous delight in flying over the home of its enemy, darkening the sun with its feathers, filling the air with wild shrieks and lashing the seas to a fury with the flapping of its wings. Still more annoying to the Mighty-Water Spirit was the fact that the great storm-bird continually poached upon what he chose to consider his private hunting-grounds. Especially did it prey upon that great innocent beast, the moon calf, pecking at one side of the animal until the tasty flesh had been quite eaten away. Again and again the Mighty-Water Spirit was thrown into a rage by seeing at sunset in the western sky an empty half-rind of his favourite game. Many and many a time he vowed vengeance on his foe. But the bird, while awake, flew high above the reach of his strongest bow. While asleep it roosted inland at such a distance that even Miwe could never trace its scent.

"One quiet morning, however, while hunting up this very river, the dogs suddenly sighted their enemy, asleep. Perched on a low mountain ridge, it was roosting by means of its single claw. The cruel beak lay concealed beneath one folded wing, but the plumage of the bird spread over the land like an autumn fog.

"The barking of the dogs awakened Ginikaje. As it straightened itself on its single leg the immense bulk of the creature filled the air like a rising mist. Nothing daunted, Miwe, the daring, sprang to attack. But Giwe, the cautious, hung back, planting his forefeet firmly against that cliff which the people of Hamilton call The Mountain.

"Ginikaje, who was ever a coward at heart, made ready

for flight. Outspreading its powerful left wing, it wheeled toward the west.

"Yelping with excitement, Miwe strained at the leash. Bracing himself yet more firmly, Giwe refused to budge. The harness strap joining the two dogs tightened and stretched. Suddenly it broke with a loud crack. Miwe, unexpectedly freed, bounded in the air to seize the single leg of the fleeing bird.

"At that instant the outspread wing of Ginikaje swept downward with a powerful stroke. Its hard pinions smote the dog across the eyes. Furious with pain, he snapped at the outstretched leg only to encounter the hard, horny claw of Ginikaje's single toe. The blow from the bird's wing had blinded his sight and baffled his aim. Vainly he strove to sink his teeth into the steel-like talon. A violent wrench from the powerful leg above and he lost his hold and fell spinning to earth. Shrieking like the blast of a hurricane, the huge bird fled into the sky."

The chief paused to relight his pipe. For a minute he smoked in silence.

"Since the day he lost his sight Miwe, the flood tide, has been less venturesome. Quietly he runs with Giwe along shore and up river mouth, content to remain within call of his master's booming voice, though the scent of a newly-born moon calf still stirs to life a restive spirit.

"After the encounter Ginikaje changed its roosting-place. Where on quiet summer afternoons or during stilly starlit nights it now sleeps no one has discovered. When tempests rage, however, its cloudy feathers darken the sky as of old, its shrieks fill the air and the flapping of its wings disturbs the ocean's peace. Should you watch he sky night after night for a month you would learn, tthat the cruel bird still preys upon the helpless moon calf pecking at one side of the beast until nothing remains but an empty half-rind. And if to-morrow you will look in the geography book at the white man's school you will

see how the Mighty-Water Spirit has painted with lake and river a picture of that long-ago encounter."

Next evening the grandson of Niganis approached the old man as the chief sat weaving a willow basket for the market-day sale.

"See!" he cried, showing Niganis a map of eastern Canada. "The white lady teacher helped me find the picture which the Mighty-Water Spirit painted of the fight between his hunting dogs and Ginikaje. The great head of the bird is Lake Superior, whose long beak runs far down into the United States. Lake Huron is its body and Lake Michigan the powerful left wing stretched for the blow that blinded poor Miwe. Georgian Bay is the bird's right wing folded to its side. We thought the St. Mary River might be its neck, and the Straits of Mackinaw its shoulders. Its single leg is the River St. Clair; its foot, Lake St. Clair; and its one toe, the Detroit River. Lake Erie is Miwe, the daring flood tide, as he bounded upward and forward to snap at the leg of the bird. Lake Ontario is Giwe, the cautious ebb tide, who hung back. The harness strap is the Niagara River broken at the Niagara Falls, while the long leash, held by the Mighty-Water Spirit, is the St. Lawrence River itself."

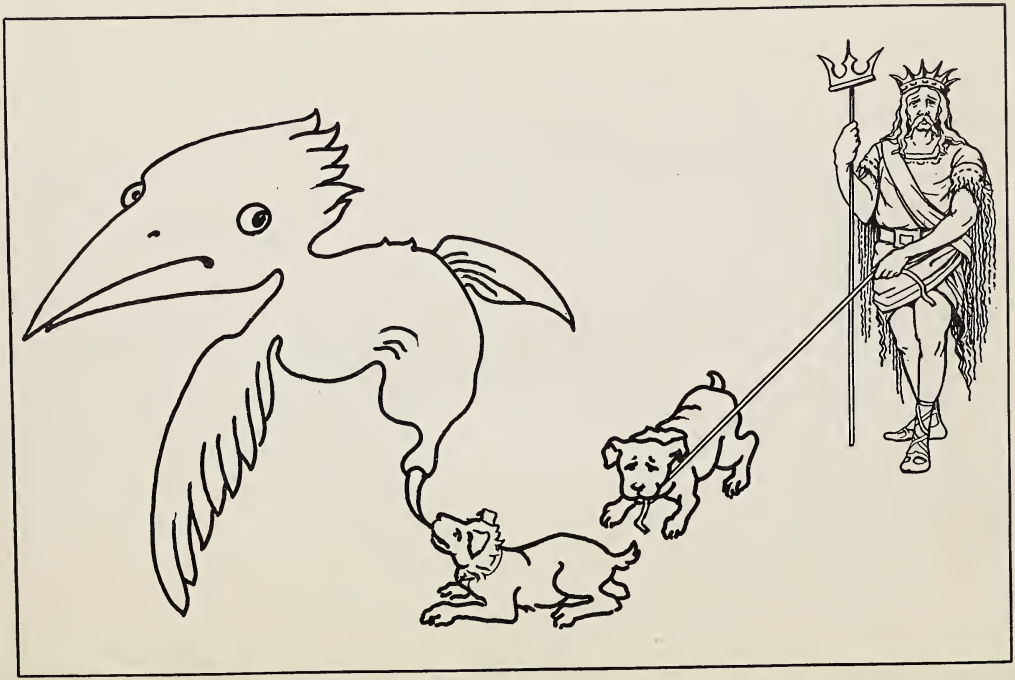
"Yes?" inquired the old chief as his grandson hesitated. "The white lady teacher said," continued the boy, "that the story was a very beautiful one, but that it was not true."

"How did the lady of the white man's school tell the story?" asked Niganis.

(To be continued)

The pupils begged to hear the remainder of the story, but Miss Goldenrule said that they would have to wait until the following lesson.

After examining a wall map of Canada to discover the various



SKETCH BY BILL

details of the picture made by the Mighty-Water Spirit, the boys and girls solved the following blackboard puzzle:

The Ginikaje's huge head	?
The Ginikaje's neck	?
The Ginikaje's shoulders	?
?	Lake Huron
?	Lake Michigan
?	Georgian Bay
The Ginikaje's single leg	?
?	Lake St. Clair
The Ginikaje's one toe	?
?	Lake Erie
The harness strap	?
?	Niagara Falls
Giwe	?
?	St. Lawrence River
The Mighty-Water Spirit	?

Instead of writing in full the story of the encounter between Ginikaje and the hunting dogs, the pupils planned composition outlines. After a brief class discussion and criticism each wrote the title he had chosen and the paragraph topics he had selected in his Geography Story Book. Bob's chum, Bill, illustrated his outline with the sketch on page 46.

Chapter IX

THE ST. LAWRENCE RIVER SYSTEM (*Continued*)

"I AM sure the lady teacher in the white man's school did not mean to contradict you, grandfather," said the boy.

"The lark's song of the rising sun does not contradict the whippoorwill's chant of eve," replied the old man. "Truth is as many-sided as man is many-minded. What did the lady who talks by the book tell?"

Thus urged, the chief's grandson repeated his school-learned lesson.

Once upon a time the central part of North America was covered by an Ancient Sea. The bottom of this sea had crumpled long before to form the Laurentian Highlands on the north-east, the Atlantic Highlands on the south-east and the Pacific Highlands on the west. For every up-turned ridge there would seem to have been an accompanying down-turned hollow, as when a wet skin dries near a wigwam fire.

An arm of the Ancient Sea lay elbowed between the Laurentian Highlands to the north and the Atlantic Highlands to the south. Roots running out from the mountains on either side made the shoreline of this bay rough and uneven. And since a double crumpling had here taken place, the waters of the bay were very deep, the sea bottom having sunk as far below level as the highlands to the north and south had risen above. Though many rivers for many thousands of years have been trying to fill in this dip with earth washed down from the mountains, the bottoms of four Great Lakes are yet below sea level.

But rivers and glaciers did carry earth and stones from the eastern and western highlands to fill in the shallower parts of the Ancient Sea. The great Central Plain was formed, closing in the south-west entrance to the

bay. Sea water in the shallows evaporated, leaving behind heaps of sea salt, which later were buried beneath scraper-loads of clay carried by glaciers from the Laurentian Highlands. The sea salt was pressed into rock salt. To-day men mine this rock salt at Windsor, Sarnia and Goderich. The fact that rock salt may be here mined proves that once long ago a sea must have washed these ancient shores.

Probably this great enclosed bay was at that time cut off from the Atlantic Ocean by a broad mountain root which extended from the Laurentian Highlands to the Atlantic Highlands across the narrow valley above Quebec City. Incoming streams from the north and torrents from melting glaciers flushed the sea water from the bay and turned it into a huge inland lake occupying double the area now covered by the Great Lakes. The overflow water likely drained through a southern outlet into the Mississippi River and thence to the Gulf of Mexico.

The St. Lawrence at that time was but an ordinary-sized river. It began on the eastern slope of the mountain root above Quebec City and emptied into the Atlantic Ocean south of Newfoundland. When North America grew continent-sick and the northern end of the Atlantic Highlands sank into the sea, the mouth of the St. Lawrence River was drowned, forming the Gulf of St. Lawrence. The bed of the lower river sank, causing the stream thereabouts to become broader and deeper and giving a greater slope and a more rapid fall to the upper end of the river.

Then began a game such as schoolboys play when the melting snows of spring form ponds of water by the roadside. You may have seen them scrape a little ditch with a stick or boot-heel through blocking snow and slush at one end of a pond. The escaping waters deepen and widen the ditch and slowly lower the pond until another snow blockade higher up interferes with the flow. A ditch dug through the second obstacle further lowers the pond, possibly turning it into a number of scattered pools

separated by ridgeways of snow and slush. These pools in turn may be drained by the digging of other ditches.

As the bed of the old St. Lawrence slowly sank, giving greater fall to the upper river, the speed of the current increased. Little by little the tumbling waters carved a valley through the mountain root above Quebec City until the big fresh-water lake beyond was tapped. The liberated waters gladly lent aid in deepening and widening the newly-formed valley. Soon the breach was sufficiently enlarged to permit the escape of a flood of captive waters.

The general surface of the huge fresh-water lake beyond slowly lowered. Islands and peninsulas broadened out to form great stretches of fertile farming land. One island, between Hamilton, Woodstock and Stratford on the south and Collingwood and Owen Sound on the north, spread out to make up south-western Ontario. Here and there on the newly-formed land, pools from the retreating lake remained in the deeper hollows. Lakes Nipigon, Nipissing and Simcoe are three such left-behind children. The surface of the huge fresh-water lake finally sank below the channel of its southern outlet. Thousands of years elapsed before the St. Lawrence again mingled with the Mississippi through a deepening of the old river bed by the people of Chicago.

Gradually, however, a second mountain root, running across the valley between Kingston and Cornwall, emerged from the sinking waters. Possibly a third mountain root at the Niagara Peninsula and a fourth at Sault Ste. Marie began to show their backs. The Kingston-Cornwall barrier divided the huge fresh-water lake into a large western body occupying the area now covered by the Great Lakes and a small eastern body lying between Cornwall and Quebec.

Lake Montreal, as we might call this smaller body, was gradually drained by the ever-deepening channel across the first mountain root. Mount Royal, which once had lifted its rocky head amid the central waters of

Lake Montreal, broadened to form the fertile island of Montreal, at first a lake-surrounded and latterly a river-surrounded land. The fine farming country about the lower Ottawa and the Montreal section of the St. Lawrence emerged as the waters subsided.

The complete drainage of Lake Montreal increased the fall of the river above and enabled it to vigorously attack the second barrier formed by the Kingston-Cornwall mountain root. The raging rapids at Cornwall show us the method of attack. The perpendicular cliffs of the Thousand Islands help us to measure the results. The deepening channel lowered the waters of Lake Ontario, exposing Prince Edward Island, the orchard lands between Hamilton and Niagara, and the fine farming country along the north shore.

As Lake Ontario sank, a third mountain root across the Niagara Peninsula came into view and undertook the task of damming back the waters of the west. But already the Niagara Falls and Rapids have eaten a deep channel half-way across that barrier toward Lake Erie. Some day the channel will be cut through to Buffalo. Then the waters of Lake Erie and Lake Huron will sink until only a river remains. A high fall will be formed on the St. Mary River as the fourth mountain root makes a last vain stand in defence of the western lake. Then some day, a long time from now, the St. Mary River will cut its way back to drain Lake Superior. The Great Lakes will be no more, and the St. Lawrence will have become a long, winding river like the Mississippi—unless man steps in and alters the course of nature.

The boy closed the geography book whose map he had been using to explain the story of the St. Lawrence River System.

"And where will the picture of the fight with Ginikaje be then, grandfather?" he asked.

For a long time Niganis thoughtfully puffed at his pipe.

"The story which the lady of the white man's school

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has told is also a good tale. It makes the mind of the young man to think," he said at length.

"But which is the true story, grandfather?" eagerly inquired the boy.

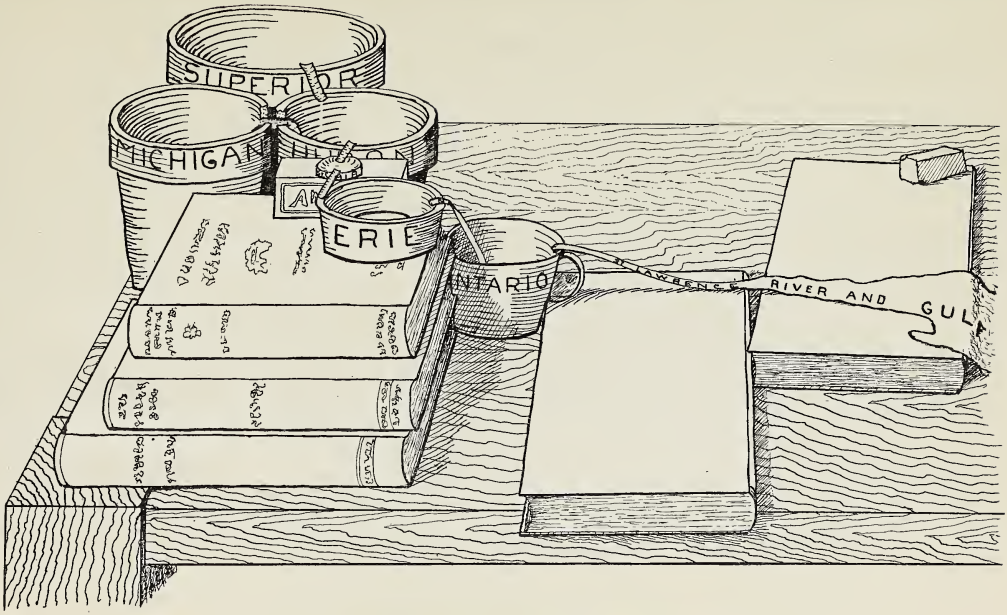
"That I do not know," replied the old man. "The elk moccasin of the brave becomes not the maiden's foot, nor her beaded doe-skin the warrior's trail, yet each serves the wearer's want."

During the telling of the story the boys and girls followed on a wall map of Canada the gallant adventures of the young St. Lawrence River as it attacked in turn the four rocky fortresses of the huge fresh-water lake.

"A sculptor once made a fountain which he called 'The Great Lakes'," said Miss Goldenrule. "Upon this fountain were carved girl figures, each with a bowl in her hands. The vessels were of different sizes, and were held one below the other, some near together, others farther apart. Water overflowed from the upper bowl into the one just beneath; from there down to the next; then to the next; until it finally reached a pond at the foot of the statue. I wonder if we could make a statue of the Great Lakes out of schoolroom material?"

The teacher and pupils represented the St. Lawrence System upon Miss Goldenrule's desk by means of several water vessels and some books. For Lake Superior they used a large flower-pot; for Lakes Huron and Michigan, smaller flower-pots; for Lake St. Clair, a porcelain paint dish; for Lake Erie, a water dish; and for Lake Ontario, a tin drinking-cup. The depths of the vessels represented the depths of the various lakes; distances above or below the bottom layer of books represented distances above or below sea level. The connecting rivers were shown by means of strips of paper. Upon each strip or vessel was printed the name of the body of water which it represented. Fortunately the rims of both the Lake Huron and the Lake Michigan flower-pots had been chipped. When the pots were placed so that the chipped spaces faced one another, a splendid Straits of Mackinaw was formed. The boys and girls greatly enjoyed selecting and arranging these materials.

In their Geography Story Books a map and a story of the St. Lawrence River System were entered. At the following Friday afternoon concert, seven of the girls, dressed in white and with bowls in their hands, represented in pantomime the statue of the Great Lakes.



CO-OPERATIVE DESK PROJECT BY CLASS

Chapter X

THE PLANTS' PICNIC PARTY

"I WISH I were a pine tree instead of a girl," remarked a small friend on her way back from a Saturday afternoon's outing in the woods.

"Then I'd never have to go home from a picnic," she added by way of explanation.

Suppose to-day we board a rapid aeroplane and circle above the perpetual picnic party being given the plants of North America by kind old Mother Nature.

Plants, as you know, feed differently from human beings. They take food through their toes instead of through their mouths. Partly because of this fact, they usually stand erect while eating, their several feet or roots firmly planted in the soil, toes pointing outward. Having no hands, each plant uses its head to spill its rain allowance in a circle upon the ground outside its feet. The water sinking into the soil dissolves sufficient food to form a thin gruel which is eagerly absorbed by many hundreds of tiny toes clustered about the ends of the branching feet.

Our meals are cooked before being served, but a plant's dinner is prepared after being eaten. The cooking is looked after by the Sunlight Restaurant Company. The raw food taken in by the toes is carried to the plant's leafy kitchen, where cooks furnished by the Sunlight Restaurant Company prepare it for use.

These cooks are not all equally good workmen. For instance, old Mr. Snowman, who serves the north country, is slow in his movements. He rarely arrives on the job much before June and usually leaves by September. As a result, plants thereabouts are poorly nourished and inclined to be stunted and scrawny.

The great inland country is in charge of twin brothers, who, curiously enough, are distinguished by their surnames

rather than by their given names. Mr. Extreme Heat, who takes over the job during the summer, is a bright, active chap. Little complaint is heard concerning his service. But when Mr. Extreme Cold, who is a surly, blustering fellow, goes on duty in the late autumn, most plants prefer to close their kitchens and go to sleep throughout the winter. A few evergreens remain awake and manage now and again to have a morsel of food prepared by the gloomy cook. As one could well imagine, the plants' picnic party in the great inland country is as lively during the summer as it is dead during the winter.

Two sisters, named Mild, are in attendance upon the east and west coasts. Miss Quite Mild looks after the Atlantic side and Miss Very Mild the Pacific side. All the plants agree that both are exceptionally capable, though Miss Very Mild, being somewhat younger, is considered the better of the two. As far north as Alaska her kitchen fires are kept burning all year round. While less of a hustler than Mr. Extreme Heat, she manages by faithful attention to duty to secure better results. Miss Quite Mild is not only less capable but also less constant than her sister. Rumour has it that once Mr. Extreme Cold tried to woo her but only succeeded in frightening her with his rude advances. Since that occasion, she avoids the northern half of her territory during his term of service on the plea that this surly admirer steals across the low Laurentian and Atlantic Highlands and extinguishes her fires with his blustering.

From the shores of the Gulf of Mexico southward the Company's business is looked after by a negro boy, Torrid Zone by name. Plants of all descriptions flock to this end of the picnic ground, since the cook is known far and wide for his warm, sunny smile as well as his prompt and untiring service.

In the matter of rain food the party is catered to by a number of dairies. The Pacific Ocean Dairy, the Atlantic Ocean Dairy, the Gulf of Mexico Dairy, the Hudson Bay

Dairy and the Great Lakes Dairy are the principal sources of supply, though several smaller concerns are engaged in a more or less local trade. Delivery is made by wind boys, who are rather a lazy, careless lot. They do not like to pack their loads over high mountains or carry them far inland. Started out with ample supplies for all in their cloud containers, they are likely to give the first customer whom they meet much more than his share and the last much less. Indeed they have been known to miss some customers altogether and to reach others with their clouds quite empty.

Mother Nature, however, is an excellent hostess and makes allowance for careless delivery on the part of the wind boys. Four long tables have been arranged lengthwise of the continent from north to south. The table-tops, of course, are rock and the table-cloths soil. The guests, feeding as they do, stand upon the board instead of being seated beside. On tables within easy delivery distance are placed such thirsty guests as the tree tribes, who consume enormous quantities of water. On tables likely to be more or less neglected by the wind boys are to be found plants like the cactus family and the grasses, who merely sip their drinks.

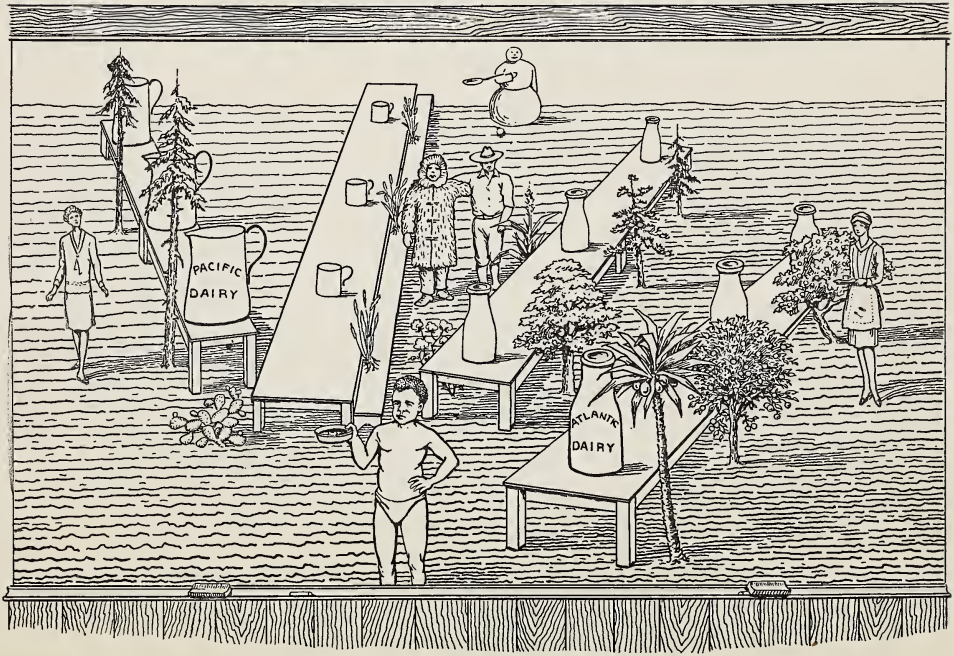
This being a picnic, the tables are not all of the same shape and size, neither are they always laid in exactly the same direction. The first is somewhat narrow. It runs along the western coast from Alaska to San Francisco. The wind delivery boys, refusing to pack their heavy cloud-containers across the lofty Pacific Highlands, spill most of the contents upon the western side of the Coast Range. Even the more trustworthy lads who manage with half-emptied clouds to surmount the Coast Range are seemingly appalled at the height of the Rocky Mountains. After climbing part-way up the steep, they pour what remains of their rain food upon the granite slopes or sprinkle the bald bare summits with sugared mist. The giant forest families have been placed on this table which is so bounti-

fully supplied with drink. Some of them, the redwoods, are three hundred feet tall and as large around as a small bedroom. Miss Very Mild, the representative of the Sunlight Restaurant Company in this part of the country, must be given some credit for the remarkable growth of patrons at this table. Were it not for her excellent cooking much of the rain food left by the careless delivery boys would be wasted.

The second table, running from the Arctic Ocean down into Mexico, is wider at the top than at the bottom. Since the western wind boys from the near-by Pacific Ocean Dairy refuse to deliver goods over the steep Pacific Highlands, this table is supplied by lads from the more distant Hudson Bay and Gulf of Mexico dairies, or from smaller local concerns. The distances are so great and the boys so careless that the service is most irregular. Rain food becomes a luxury. Indeed, the plants at the lower end of the table between the two heights of the Pacific Highlands sometimes go for months without a drink. At the request of Mother Nature the smaller plants, such as the grass and grain families, lunch on this table. The mosses, who do not mind the slow service of old Mr. Snowman, sit on the upper end, while spiny, dry-throated Mr. Cactus sits on the lower.

The third table extends from the St. Lawrence district across the Mississippi River to the west coast of the Gulf of Mexico. The middle-class forest people, spruces, pines, maples, oaks, together with the larger grass families, such as the corns, have their meals served here.

The fourth table is laid from Newfoundland to the western edge of the Gulf of Mexico and thence along the Central Americas. Excellent service is given by the wind delivery boys from the Atlantic Ocean and Gulf of Mexico dairies. Many of our wealthiest plant families dine here—the red-cheeked apple girls of the north, the golden-gemmed oranges, the snowy-haired cottons, the stately palms and the cute sugar missies.



BLACKBOARD DRAWING BY MISS GOLDENRULE

As Miss Goldenrule told the story she sketched on the blackboard four long tables, so placed that they roughly corresponded with the outline of North America. The tables were set with jugs, mugs, pint and quart bottles to represent the amount of rain food received by each. Mr. Snowman and the curiously named twins, Mr. Extreme Heat and Mr. Extreme Cold, were drawn by the teacher. Miss Quite Mild, Miss Very Mild and Mr. Torrid Zone were cut-out pictures fastened to the blackboard with plasticine. The different plant guests were drawn with brown and green crayons. Miss Apple, with her many red cheeks, Miss Orange decked with golden jewellery, and the snowy-haired Miss Cotton looked especially lovely.

On page 20 of their Geography Story Books the pupils made a drawing in coloured crayon similar to that on the blackboard. On page 19 they wrote the story of the Plants' Picnic Party.

Bob's elder brother, John, who was in Grade 9, said that the chapter should have been entitled "The Climate of North America." Bob, however, stoutly maintained that no one would wish to study a climate just for the fun of it.

Chapter XI

THE ANIMALS OF OUR CONTINENT

BEFORE the lesson on the animals of our continent, each of twenty-four pupils had been asked by Miss Goldenrule to find out about the appearance, home and habits of one North American animal and to be able the following day to tell its story to the class in not more than fifty words. The lesson proved so interesting that Mary requested the teacher to permit the class to write and put on a play dealing with the subject. To this Miss Goldenrule agreed.

During the composition period the twenty-four pupils formed themselves into six groups. Each group represented one animal family, and its members undertook to arrange their geography stories in dialogue form. A management committee of five boys and girls were given charge of designing the costumes, planning the scenery and putting on the play. The product of their joint efforts is given as follows:

THE ANIMALS OF OUR CONTINENT

A Play in Six Acts

Act 1. The Bear Family

Scene—*The stage represents North America. The left, rear and right walls are hung with strips of blue paper bearing the names, "Pacific Ocean," "Arctic Ocean" and "Atlantic Ocean," respectively. Cut-out pictures of ships adorn the hangings on the east and west walls. White paper icebergs mark the strips on the north wall. The Pacific, Laurentian and Atlantic Highlands are shown by arrangements of chairs, each carrying a named placard.*

Polar Bear, Grizzly Bear, Black Bear *and* Cutie Coon *are seen on the north, west, centre and east centre stage,*

respectively. The part taken by each player is indicated by a white paper sash bearing the name of the animal represented. In some cases certain features of dress likewise serve as distinguishing marks.

P.B.—Ug! It is hot. I wish I were home in the Arctic Ocean.

C.C.—I like this weather. It ripens the corn for my dinner.

B.B.—That Arctic climate is terrible. Even here among the Laurentian and Atlantic Highlands the winter is too much for me. I search out a nice warm cave and sleep throughout the colder spells.

C.C.—I do the same in the hollow trunk of a tree.

P.B.—No wonder! How could either of you hunt in the winter? A seal would see your black and your tan coat in the snow a mile away. But in my white coat, I can creep upon an animal before he knows me from a snow-drift.

G.B.—My grizzly coat helps me in the same way. I hunt among the grey rocks of the Pacific Highlands for my prey. A deer or sheep can scarcely distinguish me from a big grey boulder, until I catch him! And then it is too late.

B.B.—That is all right for you meat-eaters. If you would try raspberries and juicy roots and wild honey once in a while you would not need to wear such common-looking clothes. I am proud of my glossy, black suit.

P.B.—I am sure my white fur makes a fine rug for many a parlour floor.

G.B.—So would my grey fur if any dare take it from me!

C.C.—Talking of clothes, did you ever see anything nicer than the black rings on my tail?

G.B.—Baby clothes. You are only a baby sort of bear anyway.

B.B.—You whistle like a schoolboy instead of grunting like a real bear.

G.B.—Or growling——

P.B.—And you eat silly little frogs and hide yourself in the top of a tree like a chickadee.

G.B.—Well, I'm off to look for a sheep.

P.B.—And I for a seal.

B.B.—And I for a wild bees' nest.

C.C.—And I for an ear of corn.

[*The Bear Family depart.*

Act 2. The Seal Family

Scene—*As in Act 1.*

Old Bill Walrus, Miss Fur Seal *and* Johnnie Hair Seal *are seen on north, west and east stage, respectively.*

B.W.—Fishing is poor to-day. I have caught only twelve so far.

F.S.—I had a fine salmon half an hour ago.

H.S.—I thought I saw a polar bear when we came up.

B.W.—Who's afraid of a polar bear?

H.S.—I am. If I were a great, big sea-elephant with a pair of long tusks like yourself I should not have to worry.

F.S.—I don't like polar bears myself. But men are worse. They invade our home on the Pribilof Islands, and club our young men to death for their glossy, brown fur.

H.S.—They treat our people just as badly. In the spring, when we go iceberg sailing off the coast of Labrador, we are hunted by sailors from the Newfoundland fleet.

B.W.—You haven't a fine coat like Miss Fur Seal. Why do men kill your people?

H.S.—For our hides, out of which they make seal leather.

F.S.—And we can't run from them because we have only flippers for feet.

B.W.—So have I. And most of the time I stay in the water where I belong.

F.S.—Some day they will sail up around Greenland and hunt you for your ivory tusks.

B.W.—Yes, they will!

[*The Seal Family depart.*

Act 3. The Deer Family

Scene—*As in Act 1.*

Sara Sheep, Buffalo Bison, Milly Musk Ox, Carl Caribou, Sadie Deer *and* Mat Moose *are seen on west, west centre, north, north centre, east centre and east stage, respectively.*

B.B.—There are only a few of us left now in Wainwright Park, Alberta. Once we roamed the prairies of North America in countless thousands.

S.D.—What happened?

B.B.—Killed for steaks and buffalo robes.

S.D.—You, with your strong, sharp horns and great shaggy shoulders?

B.B.—What can one do against men armed with rifles?

S.D.—I know. All over the rough lands of North America they shoot our people.

M.M.—And ours, too, from James Bay to New Brunswick.

S.S.—We and our cousins, the goats, are not safe from them amid the peaks of the Pacific Highlands.

C.C.—They even invade our northern ranging-grounds west of Hudson Bay.

M.O.—Since the Eskimo changed their spears for guns we are no longer safe, even beyond the Arctic Circle.

S.S.—Well, that comes of our all being grass-eaters and growing such fat, juicy roasts upon our ribs.

C.C.—And we all have hoofs.

M.M.—And horns. My broad, many-pronged ones are especially fine.

C.C.—No nicer than my branching antlers.

B.B.—I think the pair of long, sharp-pointed spears, with which my little sister, Milly Musk Ox, and I are armed, prove much the better weapons.

S.S.—But nothing like as beautiful as my big, curled horns.

S.D.—Sh! Quit quarrelling! I smell a wolf.

[*All scatter.*

Act 4. The Wolf Family

Scene—*As in Act 1.*

Connie Coyote, Walter Wolf *and* Foxy Fox *are seen on west centre, centre and east centre stage, respectively.*

W.W. (*Sniffing*)—I smell deer. [*Howling.*

F.F.—Why the howl?

W.W.—To call the wolf band together for the hunt.

C.C.—I like to howl at night. It frightens the people living on the Central Plain.

F.F.—I bark once in a while myself. But I don't care to attract the attention of people.

C.C.—Who's afraid of people? Neither they nor their dogs can catch me over the open prairies.

W.W.—Nor me in the deep forests.

F.F.—Well, you see, I have been known to indulge in a chicken dinner. They have a grudge against me.

C.C.—I steal their lambs.

W.W.—So do I. And now and then a calf.

F.F.—But neither of you fellows has a fine coat of fur which they may use for clothing.

W.W.—Do you call that red stuff of yours fine?

F.F.—They like to wear it about their necks. Besides, all of us are not red. Some are black, some silver-tipped, and up north we are white.

W.W.—I hear that, in Prince Edward Island, men pen up the black and silver foxes like sheep.

F.F.—At that we are no worse off than dogs, who are just a kind of tame wolf.

C.C.—Let's all go rabbit hunting!

W.W. and F.F.—All right.

[*The Wolf Family depart.*

Act 5. The Mink Family

Scene—*As in Act 1.*

Minnie Mink, Wee Weasel, Otto Otter *and* Brownie Marten *enter on east, east centre, west centre and west stage, respectively.*

M.M.—Where is Mr. Skunk? He is a nice-looking fellow and belongs to our crowd.

B.M.—He's nice enough looking. Like a glossy, black cat. But he has such a horrible smell. We don't go around with him.

W.W.—We are all very fine-looking, for that matter. Such slender, graceful bodies! And we have the most beautiful fur coats in the world.

O.O.—You are rather dirty now.

W.W.—Oh, I have on my summer overalls. My winter coat is pure white with a black spot. Men call it ermine. Anyway, to-day I crawled down a rabbit hole after a bunny for dinner and got a bit soiled.

O.O.—I got my brown-black suit dirty to-day coasting down a clay bank. It was heaps of fun. Then I took a swim after a fat sucker and had a bath at the same time.

B.M.—A fat sucker may be all right. But give me a tender young partridge.

M.M.—A farmer's chicken is not bad, either.

W.W.—I'll say it's good!

O.O.—I keep away from men. They are too fond of my fur. A river in the highlands with rapids and pools is my choice.

B.M.—Or a pine forest with a carpet of quiet, brown needles.

M.M.—To match your suit, you vain thing!

[*The Mink Family depart.*

Act 6. The Rat Family

Scene—*As in Act I.*

Busy Beaver, Musk Rat, Bunny Rabbit *and* Chatty Squirrel *are seen on west, west centre, east centre and east stage, respectively.*

B.R.—Why argue with me, Chatty? Of course ours is the larger family. First there is myself, the cotton-tail.

C.S.—And I, the grey squirrel.

B.R.—My cousin, jack-rabbit of the prairie.

C.S.—The black squirrel and the red squirrel and the chipmunk.

B.R.—The white hare.

C.S.—The prairie gopher who digs a nest in the ground.

B.R.—The snowshoe rabbit who lives in the north.

B.B.—Oh, be quiet! We are all chisel-toothed gnawers, every one of us. I, myself, can gnaw down a poplar or a birch tree.

C.S.—I can gnaw into a nut. And that has a hard shell.

B.R.—When I am hungry, I gnaw the bark from trees.

M.R.—So do I, though I much prefer a water-lily root or a tender clam.

B.R.—That is because you live in swamps and creeks and have to eat that sort of food. I much prefer a nice dry home like my burrow.

C.S.—Or my home in a hollow tree.

M.R.—You should see my winter home, built of swamp grass and mud. The frost makes a cement wall of it which even the fox cannot break into.

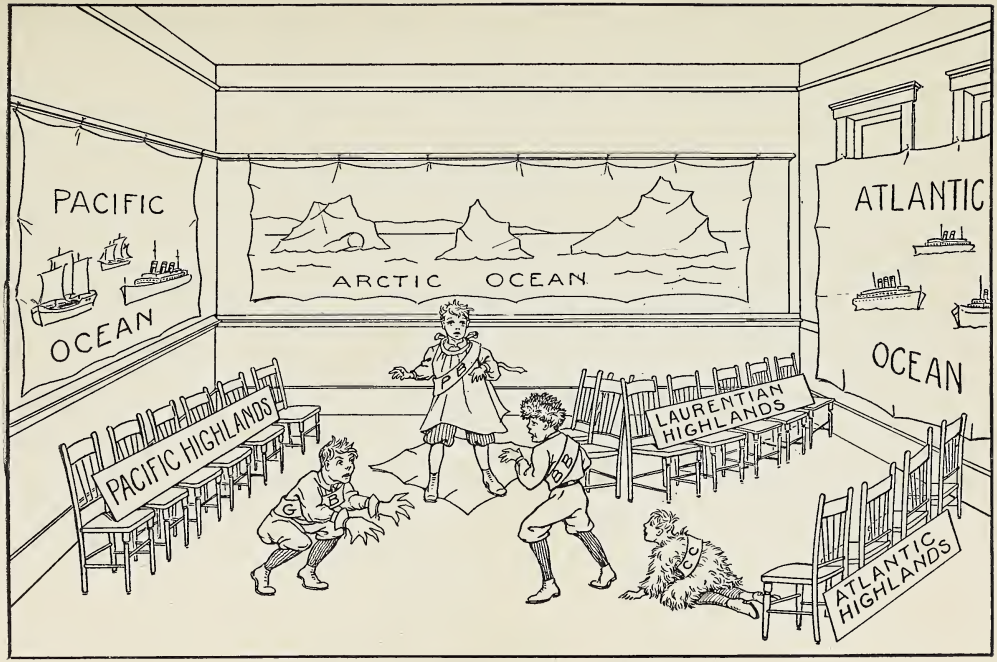
B.B.—Hear you country people talk! You should come to a beaver town to see real houses. We build a dam of tree trunks, stones and mud across a stream to make ourselves a pond. In this pond we build houses of branches and mud, which look like African kraals. Every home has two storeys, a cellar where our birch-bark food is stored, and an upstairs above water level, in which the family dwells. We are so industrious and social that the Canadian people have adopted the beaver as their national emblem.

ALL—We think the Canadian people have made a wise choice. Industry and helpfulness are the foundations of all good societies, animal or human.

On page 20 of their Geography Story Books, each pupil filled in lists under the following headings:

Animal Home Food Use

On page 19 they pasted cut-out pictures of their animal friends.



SCENE FROM THE ANIMALS OF OUR CONTINENT PLAY

Chapter XII

OUR CANADIAN HOMESTEAD

A MAN who settles on land in a new country is known as a homesteader. The land on which he locates is called a homestead. The first duty of a settler is to stake out the boundaries of his lot so that it may be separated from the lots of his neighbours. He then looks his farm over to discover a suitable location for house and barn and to find what parts are best adapted to the raising of potatoes, corn, wheat and other crops.

Our own particular country in the Continent of North America is known as the Dominion of Canada. Since Canada is a comparatively new land we might think of it as a homestead and the Canadian people as homesteaders. Let us pretend to-day that we are performing the settlement duties connected with the homesteading of this new country.

Our first duty will be to mark its boundaries. Fortunately half our country is in contact with water, and we shall have little difficulty in determining the Arctic, Pacific and Atlantic Ocean boundaries on the north, west and east of our homestead. But between ourselves and our next-door neighbours we shall have to lay out a number of line fences.

On our north-west, separating us from the saucepan-shaped country, Alaska, we shall plant a row of stone pillars running straight south from the Arctic Ocean to one of the loftiest mountaintops in the Coast Range. From Mount St. Elias we shall use the highest peaks of the Coast Range for fence-posts as far to the south-east as Dixon Entrance, where we meet with the Pacific Ocean boundary. Though the outstanding peaks of the Coast Range lie in a very crooked line, they make excellent

fence-posts, since no one would care to dig them up or otherwise remove them.

To the south, between our land and that of the United States, we shall have to lay out four line fences. The first will be a row of white posts running east and west between the Pacific Ocean and the Lake of the Woods along what is known as the 49th Parallel of Latitude. We shall find difficulty in marking the second and third so that a traveller may know for certain in which country he is journeying. The one lies through the Lake of the Woods, Rainy River and Rainy Lake and thence partly overland to a point on the north shore of Lake Superior. The other runs from this point through the centre of the St. Lawrence Lake and River System to a place on the southern bank opposite Cornwall. The fourth we shall mark with a sickle-shaped row of white posts whose straight handle points eastward from Cornwall and whose curved blade, after bending to the north, tickles the Bay of Fundy with its tip.

Searching the mountains again for fence-posts, we shall use the highest peaks of the eastern arm of the Laurentian Highlands to mark the boundary between ourselves and Labrador, a part of Newfoundland, our sister in the British Empire.

Our first settlement duty having thus been performed, we turn to the second. While visiting your uncle in the country, you may have noticed how his farm was naturally divided into different parts. Some of it was high and ridgy, some flat and level, some low and swampy. There was sandy soil where corn grew well, clay land upon which fine hay and grain could be raised, stony ground where sheep pastured and a hollow of black earth planted to potatoes. We might call these the natural divisions of the farm. Our homestead, the Dominion of Canada, is likewise made up of certain natural divisions. Our second settlement duty will be to investigate these natural divisions and take note of the widely-varied opportunities with which Nature has blessed the Canadian people.

The first natural division on the west is the Pacific Plateau. It is like an immense stretch of figured carpet hung across two stone walls. These stone walls are the Coast Range on the west and the Rocky Mountains on the east. This natural division likewise includes Vancouver and Queen Charlotte Islands, since these are surviving portions of another range long ago drowned. Toward the south the two walls spread and the carpet between dips into rough folds. In these folds water has gathered to form long, narrow lakes running north and south and known as the Finger Lakes. The shores are fertile and, being protected by mountain ranges on either hand, make excellent orchard lands. The western coast is rugged and deeply marked with inlets. Long ago, when the outer rib of the Pacific Highlands suffered from continent-sickness and sank, the waters of the ocean rolled into the river mouths and valleys of the Coast Range to form deep bays. Streams from melting snow on the highland peaks rush in torrents down the steep slopes to empty into the Pacific Ocean on the west or to flow along the Central Plain on the east. A land of towering snow-clad mountains, indented coasts, rushing rivers, finger lakes and fertile valleys.

The second natural division is the Central Plain Region. It is really the filled-in bed of the Ancient Sea which once lay between the Pacific Highlands on the west and the Laurentian Highlands on the east. The area about the Manitoba Lakes forms the lowest level. From here the land rises in two widely-terraced steps to the foothills of the Pacific Highlands. The rivers are shallow and slow flowing. Many of the smaller lakes are sloughs which dry during the summer. This level, fertile region can be farmed easily and profitably. It has been called the bread-basket of the world, because much wheat is raised for export.

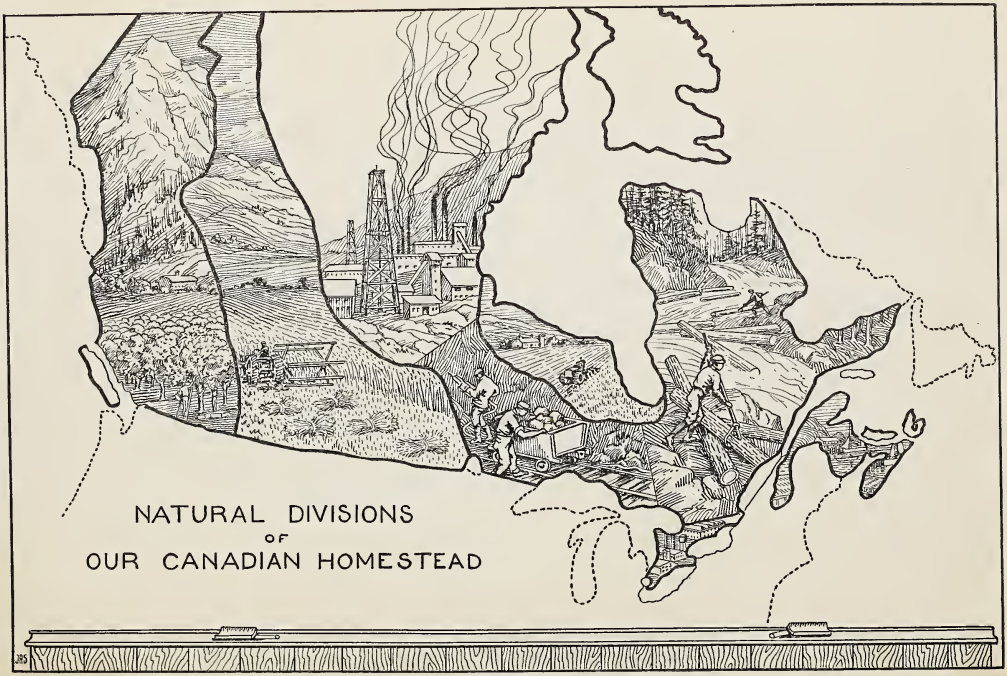
The third natural division is the horseshoe-shaped Laurentian Plateau, the remains of the once gigantic Laurentian Highlands, whose towering peaks were ploughed

down by glaciers of long ago. It is a land of mountain stumps, carpeted with green spruce forests and gemmed with lakelets and clear, flowing streams. No region on earth affords such opportunities for lumbermen and miners. Along the inside edge of the U-shaped hollow lies the Clay Belt, another vast plain, almost a natural division in itself. Its level, washed-down soil will make, if not a bread-basket, at least a bun-basket for the hungry nations of the world.

The fourth natural division is the St. Lawrence Valley. It lies on both sides of the St. Lawrence River System between the Laurentian Highlands on the north and the Atlantic Highlands on the south. In some places, especially about the Great Lakes Region, this valley spreads out over thousands of acres of fine farming land. In other places its rocky walls draw close to the river banks. Because the St. Lawrence River System forms a waterway into the heart of the continent, this region is the great trading and manufacturing centre of Canada.

The fifth natural division is the Atlantic Plateau, or as it is sometimes called, the Maritime Region. Maritime is a word which means "upon the sea." Each of the other natural divisions has the right to use this name. But the Atlantic Plateau, being the first British settlement, first claimed it in much the same way as an eldest son has first choice of given names. This region was formed when the northern end of the Atlantic Highlands had an attack of continent-sickness and partly sank into the sea. It is like the tumbled-down end of a wood-pile, rough and hilly, but with here and there stretches of level country which make fine farming lands. Among the inlets of its uneven coasts are famous fishing places. The lumberman, miner, farmer and fisherman can all find splendid opportunity here.

While Miss Goldenrule was telling this story, she coloured the natural divisions upon a blackboard map of Canada—the Pacific Plateau purple tipped with white, the Central Plain



MOSAIC MAP CONSTRUCTED BY MARY AND BETTY

Region yellow, the Laurentian Plateau brown, the St. Lawrence Valley red, the Maritime Region green, the water boundaries and the St. Lawrence River System blue.

The pupils then played a Geography Game. There were five rows of seats in the room facing north. The first row to the west represented the Pacific Plateau; the second, the Central Plain; the front half of the third and fourth, the Laurentian Plateau; the rear half, the St. Lawrence Valley; and the fifth row, the Maritime Region. The teacher would say, "My mountains are ——?" or "My rivers are ——?" etc., and call upon a pupil from one of the rows to complete the sentence in full. For each correct answer she placed a mark in one of five columns upon the blackboard.

During the Manual Training class the day before, each pupil had cut from cardboard an outline map of Canada, somewhat smaller than a page in his Geography Book. The islands were not separated from the mainland, but were indicated on the cardboard by blue marks drawn to represent the dividing straits. The boys and girls now used these cardboard "cut-outs" to draw an outline map of Canada on page 23 of their Geography Story Books, taking care to indicate the islands by marking the straits in blue. The natural divisions of Canada were coloured in crayon upon this outline map, and the name of each was printed in black lead-pencil from left to right. On page 24 the story of these divisions was written.

Mary, who was very proud of the mosaic picture of North America which she had made to illustrate Chapter I of her story book, asked that she and her friend Betty be allowed to construct a mosaic picture of the natural divisions of Canada on the blackboard. The results of their efforts are shown on page 72.

Chapter XIII

HOW WE FENCED OUR HOMESTEAD

IN the previous chapter we noticed how uncle's farm was made up of certain natural divisions, portions of it being high and ridgy, portions low and swampy, while other portions were level and easily cultivated. Apart from such natural divisions, the farm is also divided after quite another fashion. It is laid out and fenced into differently-sized and differently-shaped fields. Some fields contain the same sort of land throughout. Others are composed of both ridgy and level, or level and low-lying lands. Indeed, where it has been found more convenient to so fence and work the property, all three of these natural divisions may occur in a single field. Since fencing a farm is the concern of man rather than of Nature, the fields so formed are called man-made or artificial divisions.

In our homestead, the Dominion of Canada, there are artificial as well as natural divisions. Just as uncle's land was fenced in order that the business of farming might be better carried on, so our homestead has been laid out into great and small artificial divisions in order that the affairs of the country may be handled more readily. The business of a nation is managed by its government. Since the artificial divisions of a country have to do with government, they are usually called political divisions. To-day we wish to learn in what way our homestead, the Dominion of Canada, was fenced off into those larger political divisions, known as provinces and territories.

The present political divisions of Canada were formed in much the same slow, gradual fashion as were the artificial divisions on uncle's farm. Both may be divided into three corresponding periods.

When great-grandfather first came to the farm as a settler, he was more concerned with clearing the land and

growing enough to eat than with dividing his homestead into nicely-planned fields. Here and there he fenced off bits of cleared ground upon which to grow his scanty crops. Between his property and that of his neighbours he built rough dividing lines. While doing so he had several disputes with a cousin who owned land to the south, and with old Mr. Hudson, a trapper rather than a farmer, who held uncertain squatter's rights to a section on the north-west of great-grandfather's property. Both disputes, however, were settled in a gentlemanly, give-and-take fashion.

During his lifetime grandfather laid out the whole farm into more or less regular fields, divided one from the other by rail or stump fences. He also purchased an additional hundred acres to the north-west from old Mr. Hudson, the squatter, paying him in cash an amount agreed upon, and giving him certain trapping and dwelling rights during his lifetime. Part of this new property he cleared, though most of it remained as a wood lot throughout grandfather's life.

When uncle inherited the farm he immediately set to work on the wood lot which had been purchased from old Mr. Hudson. He cleared and fenced two fine fields to the south. He next replaced the old rail and stump fences with wire, straightening the lines between some fields, and changing the sizes and shapes of others. He expects some day, with the help of his growing family, to completely clean up and enclose the remaining part of the wood lot to the north.

When our country first came under British government, its political divisions very much resembled the scattered clearings on great-grandfather's homestead. To the north-west was the Hudson's Bay Company's Territory; about the St. Lawrence River huddled old French Canada; to the east lay Acadia. Boundaries were nowhere clearly defined. The greater part of the country was as yet unexplored.

With the arrival of more settlers, especially the United

Empire Loyalists, new political divisions arose. On the Atlantic four colonies were formed, New Brunswick, Nova Scotia, Prince Edward Island, and Cape Breton, each under a distinct government. Old French Canada was divided into Upper Canada and Lower Canada. On the Pacific the colonies, Vancouver Island and British Columbia, were taken over from the Hudson's Bay Company. Soon, however, Cape Breton joined with its old neighbour, Acadia, now called Nova Scotia, a name which means New Scotland. Vancouver Island likewise united with British Columbia. The country at this time was very like the farm which great-grandfather left to grandfather. Part of it was roughly fenced into colonies, part was yet wild and unsurveyed.

The rearrangement of political divisions in Canada during the period of Confederation resembled the changes brought about on uncle's farm during his father's life. By the Confederation Act the four provinces, Upper Canada, Lower Canada, New Brunswick and Nova Scotia, united to form the Dominion of Canada. Upper Canada was re-christened Ontario, and its governing centre or capital was finally located at Toronto. Lower Canada was re-christened Quebec, with its capital at Quebec City. The capital of New Brunswick remained at Fredericton and of Nova Scotia at Halifax. Ottawa was chosen by Queen Victoria to be the capital city of the entire Dominion.

The government at Ottawa was to look after affairs which had to do with the business of the whole country, such as military matters, treaties and trade with foreign countries, post offices, etc. The governments at the provincial capitals were to attend to such business as was the concern of each province only.

Shortly after Confederation three other provinces entered the Dominion, Manitoba with its capital at Winnipeg, British Columbia with its capital at Victoria, Prince Edward Island with its capital at Charlottetown. The huge area of land in central and northern Canada

controlled by the Hudson's Bay Company was purchased by the Dominion Government who re-named it the North-West Territories and ruled it directly for a time by means of that splendid body of soldier constables known as the Mounted Police. Canada, after Confederation, was very much like the farm which uncle inherited from grandfather. The whole country was now one. The majority of the provinces had been organized much as we find them to-day.

From the period of Confederation up to the present time Canada has been largely concerned with readjusting her political divisions. Two new provinces were formed from the southern area of the North-West Territories; Alberta with its capital city Edmonton, and Saskatchewan with its capital city Regina. Quebec was enlarged to include all the land east of Hudson Bay to Labrador. Ontario and Manitoba were doubled in size by moving their boundary lines northward. During the time of the Klondike gold rush Yukon was made a separate territory. The remaining portion of the North-West Territories was divided into three districts, Mackenzie, Keewatin and Franklin. Some day with increased settlement these territories will likely be formed into provinces contro ling their own local affairs.

As a result of this long period of fence building and fence changing, Canada now consists of three large provinces, Quebec, Ontario and British Columbia three medium-sized provinces, Alberta, Saskatchewan and Manitoba; three small provinces, New Brunswick, Nova Scotia and Prince Edward Island; two territories, Yukon and the North-West Territory, the latter being divided into three districts, Mackenzie, Keewatin and Franklin.

While the story was being told, Miss Goldenrule marked the growing political divisions of the Dominion upon a slate outline map of Canada which hung upon the wall. As each new province or territory appeared, she wrote its name and the name of its

capital city upon the blackboard as well as upon the outline map. The children were drilled in the spelling of each new word.

After the story was finished, the names on the outline map were erased, while those on the blackboard were left. The pupils one by one re-wrote the name of a province, territory, district or capital city upon the outline map, as required by the teacher. If any one had forgotten how a word was spelled, he was permitted to look at the list on the blackboard. Miss Goldenrule did not believe in letting a pupil guess at the spelling of a word while he was yet in the learning stage. This practice was repeated several times during the period and once or twice each week for the following month.

Then nine pupils went to the front and formed a line facing south toward the seats. Four more pupils formed in line behind these. Each pupil in the front line was to represent one of the nine provinces according to the order of his position in the row. The pupils in the rear line from west to east represented Yukon Territory and the three districts of the North-West Territory. Miss Goldenrule then made such statements as: "We are the prairie provinces," "I am the largest province," "My capital city is Regina," "We were the latest provinces to be formed," "I am named after a mighty Canadian river," "I was founded by U. E. Loyalists," etc. The pupil or pupils representing the political division indicated by the teacher's statement were to step forward one pace. If any one failed to respond, or responded wrongly, the first member of the class to correct the mistake was permitted to take the defaulter's place.

After this rather exciting game the pupils wrote the tale of "How We Fenced Our Homestead" in their Geography Story Books. For homework they illustrated the story by making an outline map of Canada with the aid of their cardboard models. The political divisions were marked with coloured crayons and the name of each, together with that of its capital city (if any), was printed in its proper place.

Chapter XIV

HIGHWAYS

THE early settlers in Canada travelled from place to place on foot or on horseback. Many a morning your great-grandfather, with a sack of wheat over his shoulder, has set out to walk to the nearest gristmill, ten, twenty or even thirty miles distant. Perhaps he rode horseback and carried the bag of grain across the animal's shoulders. Being a kind-hearted as well as a careful man, to save his faithful beast he often walked the greater part of the distance.

On the prairie or other open country he found his way by means of certain landmarks, a hill, a stream or a clump of trees. Travelling through forest was more difficult, since one might easily become lost. To mark his path your great-grandfather used to cut chips in tree trunks along the way. The white patch of freshly-cut wood was called a blaze, and the path marked out by such chips was known as a blazed trail.

As the settlers became more prosperous they began to use waggons, sleighs and stone-boats to move goods from place to place. A stone-boat is a pair of low runners covered with a platform. Later a light, two-seated waggon, called a democrat, came into use for travelling. The trails were widened by chopping down trees, cutting away underbrush and removing stumps and stones. Many of our main highways began in some such fashion.

As the country became more thickly settled, concession roads and side roads were cleared between adjoining farm blocks or sections. During the summer and winter months these roads, though rough, were easily travelled. But in the spring and autumn, while the ground was wet, they became deeply rutted under heavy loads of grain and lumber. Across swampy lands the settlers built

corduroy roads. These were made by placing logs side by side across the road and filling the spaces between the logs with earth and gravel. On some of the main thoroughfares plank was used as a flooring. While new, these planked roads were almost as satisfactory as modern pavement.

But neither corduroy nor planked roads were entirely satisfactory. The former soon became bumpy and the latter broken. People were forced to study the science of roadmaking. They found that bad roads were chiefly caused by lack of drainage. Wet ground is easily cut under pressure and readily heaved by frost. To remedy this lack of drainage ditches were dug on either side of the road and the road bed itself was graded and covered with a crown of gravel or broken stone. Gravel permits surface water to seep away and at the same time gives the road a hard finish. During the fifty years after Confederation many fine roads were built after this fashion in Canada.

Then came the automobile and the heavily-loaded truck. The former wore down and brushed away the surface of the road, while the latter cut through its gravel crown. A new method of roadmaking had to be planned. Where travel was fairly light and there was little heavy trucking, roads were macadamized. They were graded and covered first with a thick layer of coarsely-broken stone and then with a thin layer of gravel. Both layers were well-packed by heavy engine-driven rollers. Sometimes warm tar was poured over the stones to cement them together. Such a road is called a tar macadam.

Where there is a great deal of automobile travelling or where heavy trucking is carried on, cement pavements are now built. Not only are ditches dug on both sides to carry away water, but the bed itself is tile drained. After being carefully graded, the road-bed is covered to a width of sixteen feet first with a layer of coarse and then with a layer of fine stone. As in a macadamized road, these layers are solidly packed by heavy engine-driven rollers. Gravel, cement and water are now loaded into huge

mixing machines and churned until thoroughly mingled. The mixture is poured upon the road-bed to a depth of several inches, first on the right-hand half, and then on the left. By building the pavement half at a time, a dividing line is formed along the centre of the concrete, which permits a certain amount of give during changes of temperature. Frequently this dividing line is tarred to keep out water and to mark the right-of-way for drivers. When the cement has set, a shoulder of earth several feet wide is banked against the pavement on each side to keep the concrete in place and to widen the roadway.

On both sides of the main highways are planted road signs facing the driver on his right which give warning concerning the nature of the way ahead. Gasoline stations, refreshment booths and sleeping-cabins have been built here and there in convenient locations by enterprising people for the accommodation of travellers. The highways are divided into beats, each patrolled by an officer who looks after the traffic, and into sections, each under charge of a maintenance man who is responsible for repairs, snow cleaning and other upkeep.

Good roads are costly both to build and to maintain. But they more than pay for themselves. They enable people on business or pleasure to travel rapidly and easily from one place to another. This means that business may be carried on in a larger and more effective way, and that Canadians may become better acquainted both with one another and with their own country. Good roads enable the farmer to find wider markets for his produce, and the merchant or manufacturer to make quicker deliveries. Good roads induce many tourists to enter the country who purchase our goods and advertise our products. We become better acquainted with these distant neighbours and feel more friendly one toward the other. Good roads are a benefit to every Canadian so long as we are careful, courteous, and unselfish in their use.

During the story Miss Goldenrule selected from the School Geography Picture Collection, illustrations of various roads described. These were carefully examined by the pupils. Bob was proud to point out a picture which had been presented to the school by his older brother, Sam. A picture had to be fairly large and well worth while before Miss Goldenrule would accept it for the School Collection. The giver was required to mount it on heavy brown paper of a fixed size, and to write his name in one corner. Since the mounting paper was all of one size, twelve inches by fifteen inches, the pictures could be neatly arranged along a shelf in the teacher's cupboard. Markers of cardboard separated these pictures into groups. Every pupil considered it an honour to be represented upon that shelf. It seemed to give one a share in the school.

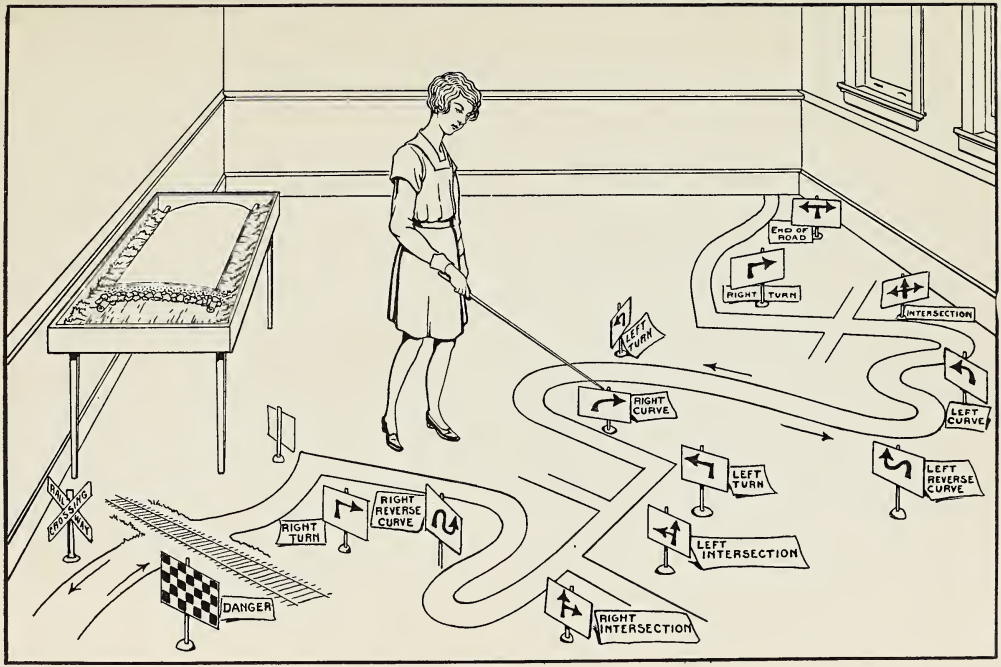
After the story had been told, the boys made a model of a paved road upon the sand-table. They graded and ditched it, drained the bed with ice-cream straws for tile, built the foundation with layers of coarse and fine gravel, paved it with sheets of cardboard for cement, and built sand shoulders on both sides. While the boys were doing this, the girls drew with chalk a road the full length of the floor. Here and there it met other roads, crossed other roads, turned, twisted and finally came to a dead end. On both sides of this road were set up on the driver's right various road signs in their proper places. Each sign was made on an inch square piece of cardboard thrust into the split end of a match. The head of the match was buried in a small lump of plasticine which served as a base for the sign-post. A number of girls acted as drivers and explained the meaning of each sign as they passed it. Then all went over to examine the sand-table, while the boys took a turn at playing driver.

In their Geography Story Books the pupils wrote the story of our highways. On the left-hand opposite page they pasted cut-out pictures illustrating the various kinds of roads described. On the lower half of the page the various road signs in common use were drawn and the meaning of each was stated.

"Would you like to go on a motor trip over some of our Canadian Highways?" Miss Goldenrule inquired of the class.

"Please, Miss Goldenrule!" they answered in a chorus.

It was arranged that on the following geography period, two days thence, the entire class would leave Windsor, Ontario, in a big motor-coach for the Maritime Provinces. The trip was to last two days. General expenses were to be shared after this fashion. The party was divided into three groups and the trip into six stages. Each group was given charge of two stages, one



FLOOR-WORK EXERCISE

during the first and one during the succeeding geography period. They were required to furnish map-makers, photographers, reporters, and one announcer for each stage. The map-makers were asked to construct upon the blackboard road-maps of their sections of the trip. The teacher suggested that the six road-maps might be made continuous along the full length of the blackboard. Not fewer than four, not more than six important towns were to be located along the route of each section. The photographers were to find pictures illustrating their stages of the trip, and to place these in order on the ledge beneath the road-maps on the blackboard. The reporters were to gather news items describing their sections of the trip, and to help the announcer prepare his talk. Each announcer in a talk of not more than five minutes was to point out to the party the most interesting things to be noticed along his share of the route.

Miss Goldenrule agreed to move the two geography periods forward to the first morning space. This would permit the map-makers and the photographers to get their material for the trip ready the previous afternoon.

Chapter XV

A MOTOR TRIP TO THE MARITIMES

NO crowd of children ever looked forward more eagerly to a real holiday than did Miss Goldenrule's class to their imaginary trip to the Maritimes. After school had been dismissed the day before, the mapmakers had drawn a wonderful road-map in coloured chalk the full length of the blackboard. The road itself and the chief towns through which it passed, alone, were shown, though here and there the merest sketch of a lake or river indicated the course along which it ran. The photographers had succeeded in securing some especially fine views. These were arranged in order along the blackboard ledge beneath the road-map. The reporters had gathered much excellent material from textbooks, library books, railway folders and automobile guides.

Mary was announcer for the first group. Miss Goldenrule had suggested that the announcers play their parts like real announcers and talk without notes and without having learned by heart their speeches. This, no doubt, caused the speakers to hesitate now and again. Indeed, it may have been the reason why certain things of interest were passed unnoticed. Nevertheless, Miss Goldenrule maintained that a speaker should learn to think while standing upon his feet, provided, of course, he had his ideas in shape. She said that when a speaker has to imagine a scene in his own mind while describing it, both he and his listeners get clearer pictures than if sentences learned by heart are merely repeated. With a pointer Mary slowly traced the course of the party along the yellow road-map upon the blackboard while she gave her talk:

"Ladies and gentlemen, we are now leaving Windsor. This is the principal city of a group of busy towns known

as the Border Cities. On your left is the Detroit River. No other body of water in the world carries more freight. Across the river is Detroit, where many American automobiles are made. Windsor is connected with Detroit by means of a ferry service, a bus and automobile tunnel beneath the river, and by the immense Ambassador Bridge which you see in the distance. Yonder are large salt works. In a minute we shall be passing an important Canadian automobile plant.

"We are now travelling through one of the garden spots of Ontario. Notice the fields of factory corn, tomatoes, tobacco, and sugar beets on both sides of the road! The peculiar odour in the air comes from one of our large Ontario gas fields. We are now entering the city of Chatham, and now crossing the Thames River. That large factory is where the beets you saw growing will be manufactured into sugar.

"Leaving Chatham, we enter the great cattle-raising section of Ontario. For the next hundred miles you will notice herds of black-and-white dairy cattle and herds of reddish-coloured beef cattle. You will also see several factories where milk is manufactured into cheese and butter.

"We are now entering the city of London. To the extreme north you can catch a glimpse of Western University. The factory on the left is where soda biscuits and candy are made. On your right is a stove foundry.

"We are now passing through Woodstock. This city is the business centre for dairy products in Western Ontario. The town nestled in the valley below is Paris. The large factory is a knitting mill. Here we cross the Grand River. Following the north banks of this river we enter Brantford. Yonder buildings are the plough works we visited not long ago to watch the moulders making castings. And here engines and machines are manufactured.

"The water on our left is Burlington Bay, the harbour of the city of Hamilton. When the St. Lawrence River Canals have been enlarged, Hamilton will be a great ocean

port. On the right is a rocky height which runs from Niagara to Owen Sound. We have had a long journey and shall lunch in Hamilton. This afternoon by special permission from the management we shall visit Niagara Falls. . . .

"I hope you all enjoyed your splendid lunch. We are now passing through the manufacturing part of the city of Hamilton. Yonder are several knitting mills. In that large plant electrical articles are manufactured. Yonder factory makes agricultural machinery, and here are some of the great steel manufacturing plants of Canada.

"We are now passing through the fruit garden of the Province. Between the rocky height on our right and the blue waters of Lake Ontario on our left, the plain is covered by peach, plum, cherry and pear orchards. The fields containing rows and rows of vine-covered racks are vineyards. We are now crossing the old Welland Canal and entering the city of St. Catharines. Yonder large buildings are canning plants. In those factories silk is manufactured.

"In the distance you can see the mountain of pulp logs at the paper-making plant in Merritton. We are now crossing the great Welland Ship Canal. This is the Chippewa Power Canal which carries the waters of the Upper Niagara River to the Queenston Power Plant on our left. This plant is owned by the people of Ontario and furnishes them with electricity at cost. The statue in this beautiful park is in memory of General Brock, the hero of the Battle of Queenston Heights.

"Partly retracing our path, we gaze at the green waters of the Niagara River in the gorge below. Yonder is the Whirlpool, and now we pass the angry waters of the Lower Rapids. The building on our right is where a well-known cereal is manufactured. You can now see the famous Niagara Falls. The first, across the gorge, is the fleecy American Fall. The thundering cataract above is the Canadian Fall.

"Ladies and gentlemen, I thank you for your attention.

We are staying to-night in the city of Niagara. During the evening, you will be able to see the marvellous beauty of the falls illumined by coloured search-lights. Be ready for an early start in the morning."

A boy from group two took Mary's place.

"Ladies and gentlemen, you are about to take the longest fresh-water automobile trip in the world. From dawn till dusk you will never for one half-hour be out of sight of the blue waters of Lake Ontario or else the mighty stream of the St. Lawrence River. Since we return in part by the same route as we came yesterday, I shall not interrupt your observations by any remarks until we near the city of Hamilton.

"On our left is the monument which marks the Battle of Stoney Creek, and on our right is a memorial to Laura Secord, a heroine of the War of 1812. We are now crossing the sand strip which cuts off Burlington Bay from Lake Ontario. The vines covering the fields along the highway bear tomatoes and melons. We are now approaching Toronto, the capital city of Ontario.

"We are riding on tires made in the rubber factory to your left. This is Sunnyside Park, the playground of the city. In yonder group of magnificent buildings the Toronto Exhibition is held each year. This is the largest fair in Canada, if not in the world. In the plant near the Exhibition grounds agricultural implements are manufactured. Much of the land along the lake front was made of sand pumped from the lake bottom. Yonder round building is the great baseball stadium. Beyond it are some of the big meat-packing plants of the city. We are now travelling along the shore-line of Toronto Bay, another splendid lake harbour. The long building on the right is the C.P.R. and C.N.R. Union Station. Facing it is the new C.P.R. hotel, where we lunch.

"Turning north we enter the business section. The tallest buildings in the British Empire are grouped about this corner. Nearing the centre of the city we see facing

us Osgoode Hall, the law school of the Province. Farther along we come to the Provincial Parliament Buildings, constructed of red sandstone. On the left is the University of Toronto, one of the largest universities in the Empire. Turning east we travel mile after mile through a rapidly-growing part of the city.

"We are now passing through that fine farming district of the province which borders the north shore of Lake Ontario. Notice the apple orchards, the fields of grain and the herds of splendid cattle. This is the city of Oshawa. The car in which we travel was made in yonder factory. We are now crossing the mouth of the Trent River at Trenton. This is the southern terminus of the Trent Canal, which connects Lake Ontario with Lake Simcoe. We are now entering Belleville, the dairy centre for Eastern Ontario. The factory in the distance manufactures cement.

"Before us lies Kingston, the oldest city in Ontario. It was founded by Frontenac, a famous French governor of Canada. On our right, just before we enter the city proper, is the provincial Penitentiary. Yonder grey stone buildings are Queen's University. That large factory is the locomotive works. The buildings near the mouth of the Cataraqui River are the Royal Military College. The river itself, over which we are now passing, is the terminus of the Rideau Canal, which joins Lake Ontario to the Ottawa River at Ottawa city.

"Leaving the city of Kingston we travel along the north bank of the St. Lawrence River. Now and again the rocky-faced, green-wooded Thousand Islands may be seen. This is the city of Brockville. In yonder factory furnaces and other cast articles are manufactured. The distant roaring sound which you hear comes from the rapids near Cornwall. This is the Cornwall Canal, built to enable ships to avoid these rapids.

"We now leave Ontario and enter the Province of Quebec. A short run brings us to the mouth of the Ottawa

River, which we cross and find ourselves in Ste. Anne, on the Island of Montreal. Those are the beautiful buildings and grounds of MacDonald College. In another half-hour we shall be in the city of Montreal, where we remain for the night. Ladies and gentlemen, I thank you."

"Ladies and gentlemen," began the announcer for group three, "we are about to make an early-morning tour of the city of Montreal. This city was founded by Champlain over three hundred years ago. It and its suburbs cluster about the twin heights, Westmount and Mount Royal. From the latter the city derives its name.

"As we leave Dominion Square, notice St. James' Cathedral, to the right. It is an exact copy of St. Peter's Cathedral in Rome. Here is the chief business centre of the city. There are no towering sky-scrapers as in Toronto. On the other hand, the buildings are solid-looking, roomy and uncrowded.

"We are now looking from the Observatory at the summit of Mount Royal, having ascended the heights by an incline railway. Directly in front is the St. Lawrence River, spanned by the mile-long Victoria Bridge. At the head of the bridge to the right are the C.N.R. shops and to the left freight wharves and grain elevators. Montreal ships more grain than any other port in the world. Several miles up the river you can see the Lachine Rapids. You can also see the Lachine Canal, which begins near the wharves and runs through the south-western part of the island till it again connects with the St. Lawrence River above the Lachine Rapids. Montreal is the head of ocean navigation, since large ocean vessels cannot pass through the present canal.

"All the city which we see does not belong to Montreal proper. By the Lachine Rapids is the city of Lachine. You can see from here the tall chimneys of its steel works. Between Lachine and Montreal is the city of Verdun. Between Verdun and where we stand is the residential city of Westmount. On the other side of Mount Royal is

the city of Outremont. Taking a last look at McGill University directly at our feet, we shall return to our coach and motor through the eastern part of Montreal.

"We are now motoring downhill in the direction of the harbour. This is Notre Dame Cathedral, the finest church in North America. We are now in the French section of the city. Notice the houses with their balconies, their high front steps and their tidy appearance. This is the largest fur store in the world. We are now passing through Lafontaine, Montreal's most beautiful park. These are the huge C.P.R. Angus shops. Turning again toward the river we follow the shore road past great cotton mills, sugar refineries and steel works. We are in the country once more. See the melon gardens for which this island is noted.

"Crossing the north branch of the river we are on the mainland Montreal-Quebec Highway. Notice the long, narrow farms stretching inland from the river. During the early French settlement everybody wished his farm to front the water, because in those days people travelled largely by boat. Nearly all the houses and buildings are whitewashed. Their door-frames and window-frames are painted red. Frequently the farmhouses and buildings are not on the farms themselves. They are clustered together in little villages about a church with a tall spire. The French people are sociable and do not like living alone. There are many fine dairy farms in this part of the country.

"We are now entering the city of Three Rivers, at the mouth of the St. Maurice River. Notice the thousands of pulp-logs floating in the water. Yonder are pulp and paper mills. Here is a large cotton-spinning factory.

"We are nearing the ancient city of Quebec. Yonder bridge carries the C.N.R. tracks across the river at this point. The bridge has two huge end sections and one long connecting central section. The largest boat can sail beneath the centre section.

"We are having an early tea in Quebec, after which the

management is providing a special trip to Ste. Anne de Beaupré. On your way you will visit the zoological gardens of a famous fur company. Later you will see the Montmorency Falls, from which the city obtains its electric power. At Ste. Anne you will see the shrine to which many thousands make pilgrimage each year. To-night we stay at the Chateau Frontenac. To-morrow morning we shall make an early tour of the city. I thank you."

After each announcer's talk the reporters on the entertaining group answered many questions asked by members from the other two groups.

(To be continued)

Miss Goldenrule suggested that the pupils need not enter an account of the trip in their Geography Story Books, since it had been largely a review lesson.

At that Jake Stainham, who had recently entered Miss Goldenrule's class from another school, began to laugh.

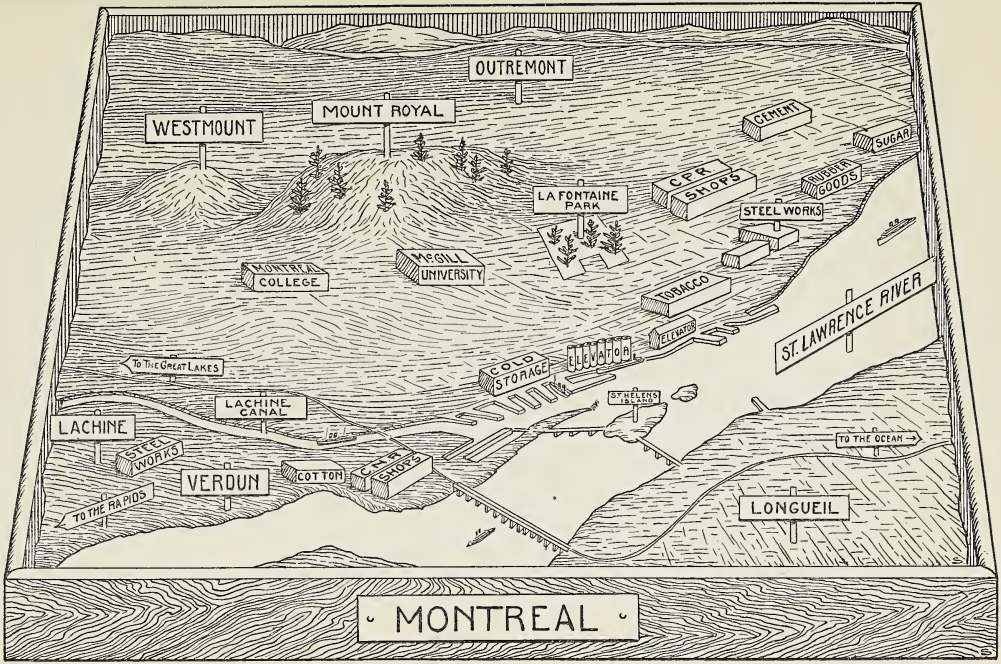
"What are you laughing at, Jake?" inquired the teacher.

"Why, at the joke," replied the boy. "You said it was a review lesson. Ha, ha! You can't fool me. We had review lessons at that other school. Write down twenty thousand names of places and say them over twenty thousand times till a fellow is blind, dizzy and dumb. You can't fool me on those review lessons."

"Did you enjoy this lesson, Jake?" the teacher asked.

"I'll say I did!" answered the boy. "We live in a mighty fine country, don't we, Miss Goldenrule? Dad's always talking about pulling out. I'm going to tell him a few things about the chances a fellow has in this land."

The class, however, decided that the lesson was too interesting to be left out of their Story Books. After some discussion they agreed to enter it in a chapter entitled, "A Guide Book to the Maritimes." The names of towns and the bare facts of interest connected with each were to be written in red ink. The bare facts concerning the stretches of country between towns were to be written in black ink. The road-map was to be drawn on the first page of the new chapter, which would include both geography lessons.



CO-OPERATIVE SAND-TABLE PROJECT BY CLASS

Chapter XVI

A TRIP TO THE MARITIMES—*Continued*

THE geography lesson dealing with the last three stages of the trip to the Maritimes began the first period the following morning. This arrangement was made in order that the road-map might remain on the blackboard and the photographers' views upon the ledge throughout the day between the two lessons. Many of the pupils were able to enjoy the views during intermission and noon periods. The announcer for the fourth group opened the lesson.

"Ladies and gentlemen, after our night's rest and our splendid breakfast at the Chateau Frontenac, perhaps a walk would do us good. We are now on Dufferin Terrace, the promenade fronting the Chateau. Across the river you can see the city of Levis. To the left is Quebec Harbour, the finest inland harbour in the world. At the foot of the precipice, two hundred feet beneath your feet, is the older portion of the city, called Lower Town. Many of the stone houses which you see were built during the time of the French rule. The streets were made narrow and angling so that the city might be easily defended in time of war. Mounting the steep slope at the end of the Terrace we find ourselves in the old Citadel. The modern fortifications defending the city are located on the rocky heights of the Island of Orleans and on the opposite shore.

"From the edge of the Citadel, looking up-river, we can see the Canadian National Bridge. Between it and where we are now standing lie the Plains of Abraham. Here Wolfe engaged Montcalm in the battle which decided the fate of Canada. Looking in the opposite direction we see the modern city of Quebec, called Upper Town. Yonder is Laval University. Many of the plants you see are

engaged in the manufacture of boots and shoes. We shall now enter the car and run down to the docks. Yonder are two passenger liners which sail between this city and England.

"Since there is as yet no roadway over the Canadian National Bridge, we shall cross the river by ferry. This is the city of Levis. Yonder is one of the largest dry-docks in the world. It is used in making repairs on huge ocean liners. Notice how rapidly the St. Lawrence River widens as we travel along its southern bank. The land hereabout is more stony and less fertile than in the valley above. Villages cluster along the river bank. The inhabitants help out their scanty living on the farm by fishing during the summer and by lumbering during the winter. This is Rivière du Loup. Yonder is a planing-mill and near it a butter factory. We lunch here.

"From Rivière du Loup we turn southward and soon enter the Province of New Brunswick. This is the town of Edmundston, on the Saint John River. Yonder are large pulp-mills. A bridge across the river connects the town with the United States. This is Grand Falls on the Saint John River. The buildings you see are power plants which develop electricity for many New Brunswick pulp-mills. We are now crossing the Tobique River, a tributary of the River Saint John and noted for its salmon fishing.

"What a fine farming section! See the splendid fields of potatoes growing in the rich valley lands of the river. This is Woodstock, a centre of farm trade. You are no doubt glad to see fine maple forests once again. We are now entering Fredericton, the capital city of New Brunswick. Yonder are the Provincial Parliament Buildings, and now we see the University of New Brunswick. This is a shoe-manufacturing plant and that a factory where small boats and canoes are made.

"We leave the Saint John River here but shall see it again when we enter Saint John City. It is growing dark now. However, we are near the end of our day's journey

as to-night we sleep in the city of Saint John. I thank you."

The announcer for the fifth group then took up the tale.

"Ladies and gentlemen, lulled to sleep by sea breezes from the Bay of Fundy, I am sure we have all enjoyed an excellent night's rest. For an hour this morning we shall look about the city and then start on a long day's journey.

"Leaving the fine hotel named after an admiral whose courage in the Great War we all admired, our way lies first to the docks. Unlike the ports of Montreal and Quebec, which are closed during the winter season, the port of Saint John is open all year round. Notice the two large grain elevators, one C.P.R. and the other C.N.R.

"This is Rockwood, a park of which the city is very proud. Going along the river we notice sawmills, pulp-mills, cotton-mills, and a large sugar refinery. Stopping for five minutes upon this bridge, we view the Reversing Fall. It is now low tide. You will notice the river is falling about the depth of a room toward the bay. At mid-tide the upper and lower rivers will be level. At high tide the fall will be covered by a strong current from the bay rushing riverward.

"We now travel through a country of hills and valleys until we reach Moncton, on the Petitcodiac River. At high tide the current from the Bay of Fundy rushes up the Petitcodiac River like a cavalry charge of water. By the railway we see the C.N.R. shops and a meat-packing plant. Yonder factory is a woollen-mill.

"This is the town of Dorchester. Those grim-looking buildings are the Maritime Penitentiary. We are now passing through the famous Tantramar Marshes. Notice the miles of dense timothy hay, and the fields surrounded by dykes instead of fences. The whole landscape is dotted as far as eye can see with innumerable hay barns. This is the town of Sackville. On the hill yonder you can see Mount Allison University. The plant on your left is a stove foundry. As we mount this hill, on your right may

be seen the old French fort Beausejour, renamed Fort Cumberland by the English after its conquest. Farther along the road are the remains of Fort Lawrence, the stronghold from which the English advanced to capture Fort Beausejour.

"Crossing the bridge we enter the Province of Nova Scotia. This is the pretty little town of Amherst. The buildings by the C.N.R. tracks are car-shops; the plant we just passed is a shoe factory. A short distance inland from the road are the coal mines of Springhill. At Parrsboro we ferry across Minas Basin, an off-shoot of Fundy Bay. We are approaching the town of Wolfville. Notice the entrance to Acadia University gleaming white in the distance. The frowning headland on your right is Cape Blomidon, the eastern nose of the North Range.

"Leaving Wolfville we pass through the Marshes of Minas Basin made famous by Longfellow's poem, 'Evangeline.' To your right is Evangeline Church, visited each year by thousands of tourists. We are now entering the well-known Annapolis Valley, the orchard country of Nova Scotia. On your right and left are the protecting North and South Ranges which make apple-growing possible in this district. To your left is the Government Experimental Farm at Kentville. As we pass mile after mile of round-headed apple trees you can imagine the glory of apple-blossom time.

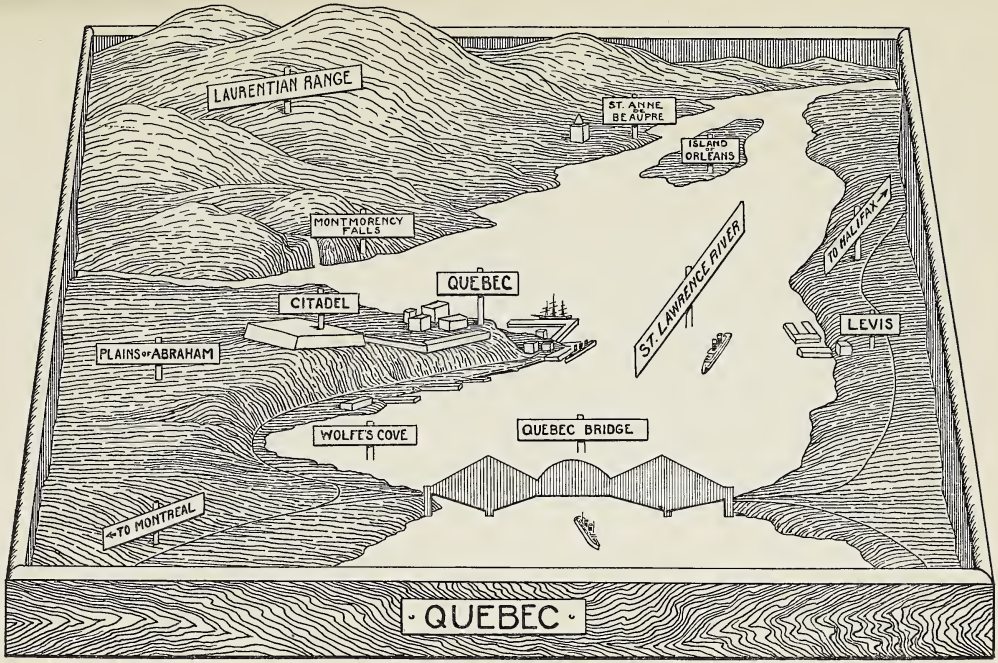
"The Annapolis River here widens out to form Digby Basin. Notice the gap in the North Range through which boats sail from Digby to Saint John. Leaving the Annapolis Valley, we round the north-west corner of Nova Scotia and enter Yarmouth. Here are racks of codfish, drying. See, the fishing fleet is just coming in! Yonder boat is on its way to Boston. The factory we are passing is a large cotton-mill. Rounding the south-west corner of the province we follow the gleaming white sandy shore to Shelburne. Here the United Empire Loyalists from the United States first settled. We pass the pulp-

mills of Liverpool and run off the main road to visit Lunenburg. See the famous fleet of schooners which fish the Newfoundland Banks! We are now entering the city of Halifax, where we spend the night. I thank you."

"Ladies and gentlemen," began the spokesman for the sixth group, "we are now on the last stage of our trip. I am glad to see how the salt breezes of the Maritimes have brought roses to your cheeks and sparkles to your eyes. We are about to climb to the Citadel, which crowns the central height of Halifax. From its ramparts we obtain a magnificent view of the city. In front of us is Halifax Harbour, one of the half-dozen finest in the world. Bending about the city to the east is Bedford Basin, in which all the navies of the world might manoeuvre. On the west is the North-West Arm, a beautiful body of water, near the head of which we see Dalhousie University. On the western harbour front are the new docks and grain elevators. On the eastern harbour front is a great shipbuilding yard. Across the harbour is the city of Dartmouth. You can see from here its great sugar-refining and oil-refining plants. We shall now descend to the car and visit the beautiful Public Gardens. Then we shall run down to the West Indies Dock and see the vessels of the Canadian Government Marine unloading barrels of molasses, bananas, and other tropical products from our sister dominions.

"Skirting Bedford Basin on our way out of Halifax we return to the headwaters of Minas Basin. This is the town of Truro. Yonder is the Nova Scotia College of Agriculture, and there a large knitting-mill. Turning to the east we come to the coal-mining towns of New Glasgow and Stellarton. At the latter place is a seam of coal as thick as a three-storeyed house. And now we are at Pictou, on the Northumberland Strait. Here we shall load our car on a boat and sail across the strait.

"The men you see in the small boat are lobster fishermen. They are pulling their line of traps. The traps are tied at intervals to a long rope, weighted with stones



CO-OPERATIVE SAND-TABLE PROJECT BY CLASS

and sunk to the bottom. The ends of the rope are fastened to the two buoys you see floating some yards apart. Can you see the man put his hand into the trap and pick out his catch? We are now entering the mouth of the Hillsborough River which forms the Harbour of Charlottetown, the capital city of Prince Edward Island. On the left-hand side as we enter is one of the most beautiful natural parks in the world. Having unloaded our car from the boat, we visit the Parliament Buildings, Dunsmore College and, just outside the city, the Agricultural College and Experimental Farm. At the docks we see a ship being loaded with cattle for Newfoundland. And here comes a motor-boat loaded with oysters dredged from the Hillsborough River. As we leave the city we pass several meat-packing and lobster-canning plants.

"A short run brings us to the North Shore Beaches. Mile after mile of the cleanest, most healthful and most delightful bathing beaches in the world! Farther down the coast we see several in-coming motor-boats. These are inshore codfishers returning from their morning work.

"Travelling inland we learn why Prince Edward Island is called the million-acre farm. It seems to be all under cultivation. Grain fields, herds of Ayrshire cattle and farm buildings everywhere greet the eye. Prince Edward Island is the most thickly-populated province of the Dominion. Yonder netted pens are silver fox ranches. Can you see the foxes peeping at us from their cute little wooden houses inside the pens? And now we come to a forty-acre field of potatoes all in bloom. Who would have thought potatoes could be so beautiful? But everything is beautiful here. The brick-red soil is painted green with crops and splashed pinkish white with potato blossoms. The houses and farm buildings are shingled from top to toe, then covered with aprons of fresh white paint prettily trimmed with red. Clumps of white birch trees gather upon the little knolls. Colour everywhere! Even lobsters turn from green to red when cooked.

"This is Summerside. The large building on the dock is used to store seed potatoes for shipment. Here again we see motor-boats coming in, some with loads of oysters, others with loads of lobsters. Turning east we soon arrive at Port Borden. Beside the long wharf is the most powerful ferry-boat in the world. Winter and summer it plies the narrowest part of the Northumberland Strait which separates the Island Province from the New Brunswick mainland. In a minute they will load our coach on the lower deck of the ferry-boat. Then, homeward bound!

"The management has requested me to thank the party for their splendid co-operation in making this trip such a huge success."

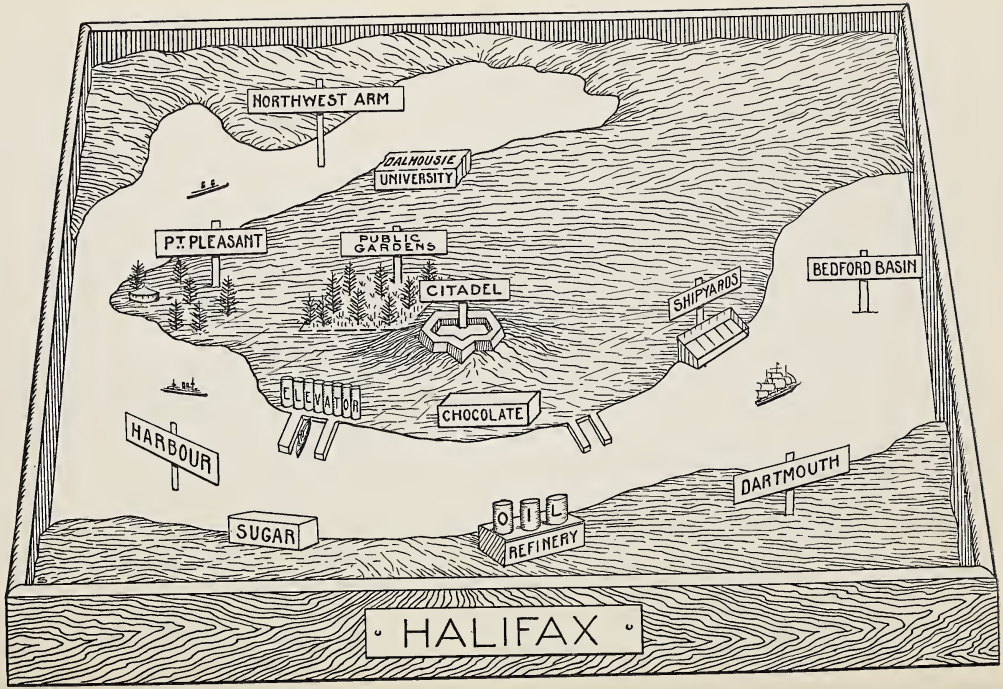
The "party" received this last statement with a hearty hand-clap. All agreed that the best part of the trip had been the fact that every one had a share in planning it. "We found out ever so many more things than the announcers had time to tell," said Mary. "And we have learned how to use automobile maps," added her brother.

"Are we going to take another trip next geography lesson?" inquired Bill, Bob's chum.

"I do think, Miss Goldenrule, that we should have a review of those western places," said Jake Stainham. "I know now what you mean by a review. After you learn a lot of geography one way, you tackle it another way. That gives you a different slant on things. Last Saturday I went out to see the wreck. I looked at it from the top of the bank, then I climbed downhill and looked at it from the railroad track. I think reviews are more fun than studying. You sort of know beforehand where you are going, yet you don't know exactly what you are going to see."

After some discussion it was agreed that the class should take two more motor trips, one along the Trans-Canadian Motor Road to the Pacific coast and the other over some of the remaining motor roads of their own province.

In their Geography Story Books the pupils completed "The Guide Book to the Maritimes." The following geography



CO-OPERATIVE SAND-TABLE PROJECT BY CLASS

lessons they made two similar guidebooks, one dealing with the western and the other with the local trip.

Making use of information which the reporters on the eastern, western and local motor trips had gathered, the class during several succeeding lessons studied in some detail the chief cities of Canada: Halifax, Saint John, Quebec, Montreal, Ottawa, Toronto, Hamilton, Winnipeg, Regina, Calgary, Edmonton and Vancouver. This work was largely carried on by means of co-operative sand-table projects. Railway folders, tourists' guidebooks and other sources of information were consulted. Indeed, during composition periods the class drafted several letters of inquiry to trade commissioners or boards of trade in the several cities concerned and were highly delighted with the literature which they received in reply. In their Geography Story Books some of the lessons were written up in the form of tourists' folders, others as sight-seeing trips and still others as board of trade circulars.

Chapter XVII

FRESH-WATER CAPTAINS

"MAY we have another review lesson?" inquired Jake Stainhan when Miss Goldenrule suggested that, having studied Canadian roadways, the class might next investigate the waterways of the land.

Another trip was proposed, but the pupils did not enthuse over the prospect of more "trips."

"We have had five now," objected Bob. "Let's sit awhile!"

"That is a good idea," replied the teacher. "Suppose we attend the Fresh-Water Captains' Banquet! We can rest while we listen to the various toasts."

After some discussion it was arranged to hold the banquet the following Friday afternoon. The last hour on Friday afternoons was usually reserved for some form of social education. Miss Goldenrule thought that proposing and replying to toasts would give the pupils good practice in this form of oral composition. The toastmaster and other speakers were chosen from an alphabetic list which the teacher kept upon the blackboard. By means of this list she was able to see that during the year every pupil in the room spoke several times, and acted, at least once, as chairman of a meeting. She did not believe in methods of education which give much practice to a few pupils who least need the exercise, and little practice to a large group who most need the training. The social committee for the month proposed refreshments in the form of biscuits and school-made lemonade at a cost of three cents per pupil.

At the conclusion of the banquet Friday afternoon the toastmaster arose: "Ladies and gentlemen," he began, "it is my privilege to welcome you to our annual banquet. I am glad to see so many ladies in naval uniform. England has long been known as Mistress of the Seas. Canada can

now boast of her mistresses of the lakes, though we hope that the hand which rocks the cradle may never rock the boat. Since the best chairman is he who can most quickly up-anchor and set sail, I shall now call upon Captain Bob Morton to propose the toast to the King."

Bob arose:

"Mr. Toastmaster and Ship-Captains All, our chairman has said that England is Mistress of the Seas. She has become powerful upon the water because her people are loyal. At sea many dangers must be faced. Sailormen have learned to obey the ship's officers. Mates trust their captains and captains follow their admiral's flag. The British Empire is like a mighty battle fleet. Old England is our flagship and a staunch old boat is she. The Dominions, big and little, are battleships, cruisers and gun-boats. The King is our loved and trusted admiral. So long as the fleet keeps together and fights together and follows his flag no one shall overpower us. Ladies and Gentlemen, I ask you to charge your glasses and drink to the health of His Majesty the King."

After the National Anthem had been sung and the King's health drunk, the chairman called upon Captain Mary Morton to propose a toast to Our Canadian Waterways.

"Mr. Toastmaster, Ladies and Gentlemen, our teacher has told us how the early Canadians journeyed overland from place to place. They also travelled by water. The Indians made long hunting and fighting trips by canoe. They also moved their families and goods from camp to camp in these bark boats. In canoes Champlain explored the Ottawa River and the Great Lakes. In canoes La Salle discovered the Mississippi River. In canoes MacKenzie sailed down the great river named after him. Canada was explored by means of her splendid waterways.

"The French first settled along the banks of the St. Lawrence River. The United Empire Loyalists made their new homes along the Saint John River and the shores of

Lake Ontario and Lake Erie. Canada was settled by means of her splendid waterways.

"Trails became highways. Canoe routes became waterways. Canoes have grown into huge steamships.

"Water travel is more delightful than any other form of travel. The passenger is neither cooped up nor smothered by dust and smoke. Water transportation of goods is cheaper than any other form of transportation. Mother Nature has built the waterways and she keeps them in repair. All that people have to do is to build a few lighthouses and canals.

"Canada possesses the finest inland waterways in the world. She has hundreds of lakes and rivers upon which to sail her ships. The St. Lawrence opens a way from the Atlantic to the centre of the country. Hudson Bay is the largest private sea on earth.

"I ask you to charge your glasses and drink to the day when there will be more vessels on Canadian waterways than on the Atlantic Ocean."

Captain Nat Neilton, of the wheat fleet, was first to reply.

"Mr. Toastmaster, Ladies and Gentlemen, the boys of the wheat fleet can drink heartily to that toast. Jonah lived in a whale's stomach but we live on a whale's back. I am captain of a kind of boat called a whaleback. It is nothing but a big iron box as long as a city block and as wide as a house. Its body is rounded like that of a whale and its hold is divided by cross partitions into huge rooms. Each room has a hatchway in its ceiling. When the hatchway is closed no water can come in. In the stern are the engine-rooms and smoke-stacks. Built upon the bow is a little cabin where the crew live. When the boat is loaded with wheat it sinks so low that the waves sometimes roll over its back, and only the engine-house and the cabin show above water. Then it does look like a whale indeed.

"At the end of my upward journey I tie the boat

beside an elevator wharf at Fort William or Port Arthur. Coming from the side of the elevator are a number of big tubes as large as my body. Each tube is called a spout. The crew open the hatches. Into each hatchway they thrust the end of a spout. The man in charge of the elevator opens a valve and the wheat from the bin runs out through the spout into one of the rooms of the boat. At the same time other spouts are filling other rooms. As soon as we are well loaded the elevator man closes the valves, the crew cover the hatches, and we sail away.

"Sometimes on Lake Superior we have very rough sailing. When the wind blows so fiercely that big waves threaten to wreck the boat we hide behind the islands on the north shore. At Sault Ste. Marie we detour the rapids of the St. Mary River by means of a canal. The Canadian canal has one large lock to lift or lower vessels the distance between the levels of the Upper and the Lower St. Mary River. The American canal has three locks built side by side so that vessels do not have to wait their turn. Sometimes when we are upbound we use the American canal.

"My boat is too long to pass the locks on the old Welland Canal. Before the Welland Ship Canal was built we used to unload at Depot Harbour, Port McNicoll, Goderich and Port Colborne. Since the opening of the Welland Ship Canal in 1931, we usually unload our cargo at Kingston or Prescott. From all these ports trains carry the grain to the elevators for ocean-going vessels at Montreal, Saint John and Halifax.

"To unload our boat at any of these ports, we tie up beside the elevator wharf, open the hatches, and thrust elevator legs down into the wheat. Each unloading elevator leg is fitted with an endless chain of buckets. When the unloading machinery is put into operation, the buckets on the endless chain travel one after the other down the leg, scoop up a load of wheat as they make the

turn at the lower end, and then carry their loads up the leg to dump them into elevator bins.

"The smaller boats of the wheat fleet go through the shallow canals on the St. Lawrence River between Prescott and Montreal, and unload directly into the Montreal elevators. Some day, when these canals have been enlarged to the size of the Welland Ship Canal, I hope to be captain of a boat which will carry a load of wheat directly from Fort William or Port Arthur to Liverpool."

Captain Patrick O'Brien made the second reply to the toast:

"Mr. Toastmaster, Ladies and Gentlemen, we Irish are not over fond of water. But we make great railroad men. So I became captain of a water railroad.

"My boat is a ferry which runs between Ashtabula and Conneaut on the American side of Lake Erie to Ports Stanley, Burwell and Dover on the Canadian side. I carry American coal to the Province of Ontario, which has no coal mines. Coal is dirty stuff to handle. Instead of unloading cars on the American side and reloading them on the Canadian side, I switch a whole train of coal cars onto my boat, ferry them across the lake and hand them over to the Canadian railroads. We Irish know how to do business on a big scale.

"My boat has a wide deck. On the deck are laid six lines of track side by side. Each line of track will hold ten coal cars. I nose my boat into a pocket-shaped dock at Ashtabula or Conneaut in such a way that the ends of the tracks on the boat face the ends of tracks on the wharf. A hinged iron bridge, called a ferry bridge, is let down and clamped fast. This ferry bridge has on it six tracks which join the wharf tracks with the deck tracks. Then a switching engine on the wharf shunts coal cars onto the deck of my boat. I unload these cars at Port Stanley, Port Burwell, or Port Dover in much the same way.

"The opening of the Welland Ship Canal in 1931 increased the business of my company. We now ship

boatloads of coal directly to Hamilton, Toronto, Oshawa, Kingston and other ports on Lake Ontario. Some of the vessels used for this purpose are old ore boats. The coal is loaded and unloaded in much the same way as is ore. When the St. Lawrence Canals between Prescott and Montreal have been enlarged we may carry Nova Scotia coal to ports on the Great Lakes."

Captain William Penhall, of the ore fleet, next rose to reply to the toast.

"Mr. Toastmaster, Ladies and Gentlemen, you will jolly well think that Lake Superior is an ocean full of whales when I tell you that I also am captain of a whaleback. However, I may say that I frequently see ordinary freight boats coming from Fort William, Port Arthur or Sault Ste. Marie loaded with cargoes of paper pulp or from Georgian Bay ports with loads of lumber. Captain Neilton has told you what a whaleback looks like. I need only describe my trip.

"I take on my cargo of iron ore at the American port, Duluth. The ore is mined in a near-by range and brought to the docks by train. The cars are shunted upon a high trestle and their ore is dumped into bins by means of traps in the bottoms of the cars. Spouts like those of an elevator, but larger, come from these bins. The ore is poured into the hold through open hatchways in much the same way as wheat is loaded. I can take a thousand car-loads at a trip.

"I take my cargo to Sault Ste. Marie, Port Colborne or Hamilton. Here the ore is unloaded by means of grab buckets. A grab bucket looks like a huge iron clam-shell as large as a dining-room table. Open-mouthed, it is swung by a crane out over the vessel. It is lowered on chains through a hatchway and into the hold of the boat until it reaches the ore. Then by machinery its mouth is closed upon a load of ore. It is pulled up with its load of ore out of the hold and the crane swings it around to dump it upon an ore car, or upon a pile. On my return journey

I call at Ashtabula or Conneaut and take on a cargo of coal for the ports on Lake Superior."

Captain Phyllis Phelan made the last reply to the toast.

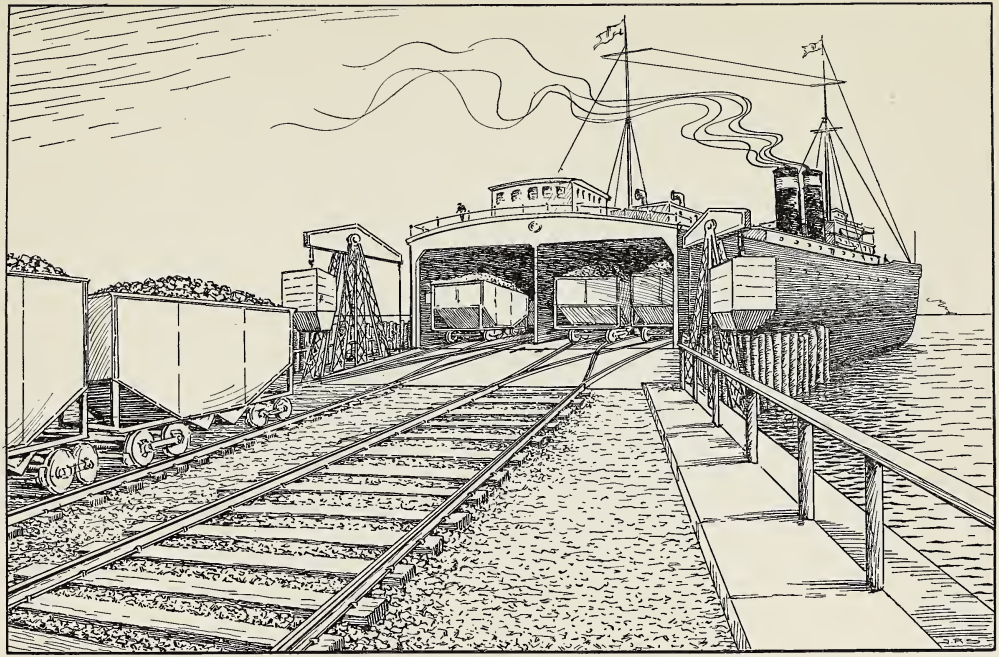
"Mr. Toastmaster, I wish to thank you for your compliment to the lady captains of our Canadian waterways. You may rest assured that since the hand which rocks the cradle is the hand that rules the world it will be able to handle a boat all right.

"Three years ago I was second mate on a line of steamers which run from Port McNicoll to Fort William. Two years ago I was first mate on another line from Sarnia to Port Arthur. Both lines are operated by railroad companies, the first by the C.P.R. and the second by the C.N.R. The boats on which I served are very fine vessels, as large and as well equipped as many ocean-going boats.

"I am now captain of a steamer which leaves Toronto in the afternoon, sails across Lake Ontario to Oswego, and then back across the lake to Kingston. We arrive at Kingston in the early morning. Leaving the city we enter the St. Lawrence River and pass through the Thousand Islands. The passengers are able to get a splendid view of these islands and the magnificent summer homes which have been built upon them. At Prescott the passengers leave my boat and embark on a smaller steamer which can shoot the rapids and pass the shallow locks on the St. Lawrence Canals. I return to Toronto.

"The passengers on the smaller steamer are able to see the artificial silk and the cotton mills at Cornwall and the cotton mills at Valleyfield. Usually, instead of going through the St. Lawrence Canals, the steamer shoots the rapids. It is an exciting experience to dash through the raging waters as they foam among dangerous rocks. But the pilot knows his business and soon the boat is safely docked at Montreal.

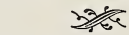
"Late in the afternoon a larger boat leaves Montreal for the trip down the lower St. Lawrence. In the soft evening light the passengers can see the long, narrow



PICTURE DISPLAYED BY CAPTAIN O'BRIEN OF THE FERRY SERVICE TO ILLUSTRATE HIS SPEECH

French-Canadian farms stretching back from the river banks, the white houses with their red door- and window-frames, and the tall pointed steeples of village churches. During the night they pass Sorel and Three Rivers and wake in the morning to find themselves beneath the huge C.N.R. bridge across the St. Lawrence River above Quebec. Sailing by Wolfe's Cove, the lofty Citadel and Lower Quebec on the left, and Levis on the right, the boat anchors at the Quebec docks, and the passengers are free to visit the ancient city.

"In the afternoon they again set sail. Passing the Island of Orleans, where Wolfe landed his troops, they see the white gleam of Montmorency Falls and the buildings of the shrine at St. Anne de Beauport. At Tadoussac the boat stops while the passengers purchase beautiful hand-woven blankets. Then the boat sails up the Saguenay, the deepest river in the world. After a run of a hundred miles between snow-capped, forest-clad mountains, the vessel turns about, homeward bound."



In their Geography Story Books the pupils wrote a newspaper report of the Fresh-Water Captains' Banquet. The report was illustrated by cut-out pictures of boats, canals, elevators and other things described by the various speakers.

Chapter XVIII

THE WELLAND SHIP CANAL

WHEN one wishes to mount to the second storey of a building one climbs a flight of stairs. The whole distance is too great to be covered in one step but may readily be accomplished in several steps. The great Welland Ship Canal is a flight of seven steps which enables vessels to climb from the downstairs level of Lake Ontario to the upstairs level of Lake Erie, or to descend from Lake Erie to Lake Ontario. Ships, of course, have no legs, so a special sort of step has to be used to enable such awkward creatures to climb. When you consider that a ship is much larger than a house, you will understand that this stairway is no small affair. How came this gigantic stairway to be built? How is it constructed? How is it climbed?

The Niagara Peninsula is a great dam of rock across the mouth of Lake Erie. It holds back the waters of that lake until their level is 325 feet above the level of Lake Ontario. Three hundred and twenty-five feet is about the height of ten houses placed one on top of the other. Water from the upper lakes continually enters Lake Erie through the Detroit River, and overflows the Niagara Peninsula dam by means of the Niagara River. At the Upper Rapids above the Falls, it skips down one-quarter of the drop. It plunges half the distance at Niagara Falls itself. Then it tumbles the remaining quarter through the Lower Rapids below the Falls.

In the days before the coming of the white man, the Indians, in making the trip from one lake to the other, used to portage their canoes and belongings up and down the rocky face of the dam. But the larger sailing vessels built by the early white settlers could not be portaged. Cargoes had to be unloaded, teamed between the foot of the Lower

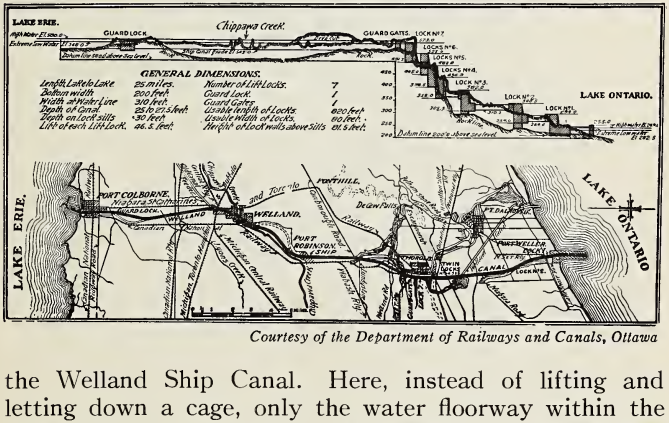
Rapids and the head of the Upper Rapids, and reloaded on a second boat. This made transportation slow and expensive.

One hundred years ago a company built a canal from Port Dalhousie on Lake Ontario to Port Colborne on Lake Erie. This canal had a stairway of forty wooden steps, called locks, up the Niagara Height. It was no wider than a fairly large room, while a tall man standing on the bottom could have touched the top. However, it served its purpose very well indeed and was a credit to the enterprise of its early Canadian builders. Later the Dominion Government took over the canal and enlarged it to accommodate steamships. In 1930 the great Welland Ship Canal, built to carry large ocean-going vessels, was completed.

The Welland Ship Canal runs from Port Weller on Lake Ontario to Port Colborne on Lake Erie, a distance of twenty-five miles. It is wider than four roadways placed side by side, and a giant would just be able to touch bottom with a tall telegraph pole. Seven steps enable vessels to climb up and down the Niagara Heights. Three steps some distance apart mount the slope between Lake Ontario and the foot of Niagara Heights. Three steps, one after the other, form a flight up the face of the cliff. A short distance beyond the top of the cliff is a landing-step to the long hallway which runs to Lake Erie. Each step is the same height. Dividing by 7, the 325-foot difference between the levels of Lakes Erie and Ontario will give you that height. How would you like to climb steps each as high as a four-storied building? Vessels, being without legs, would have less chance than you would have to mount such stairs were it not for the fact that special elevators have been provided. These special elevators are called locks.

A lock differs greatly from an ordinary elevator. To accommodate such huge passengers as steamboats it has to be made enormously large. And since these legless

passengers can neither walk nor stand, water floorways must be provided. Nor is it possible, as in the ordinary elevator, to lift and lower travellers by means of ascending and descending cages. True, at Peterboro on the Trent Canal, a pair of lift locks is so operated. A ship sails into the cage, the doors are closed, and cage, ship and all are lifted to the level above or let down to the level below. Since, however, only small vessels use the Trent Canal, only small cages are required. It would be impossible to handle in such fashion the gigantic ocean-going boats that travel



Courtesy of the Department of Railways and Canals, Ottawa

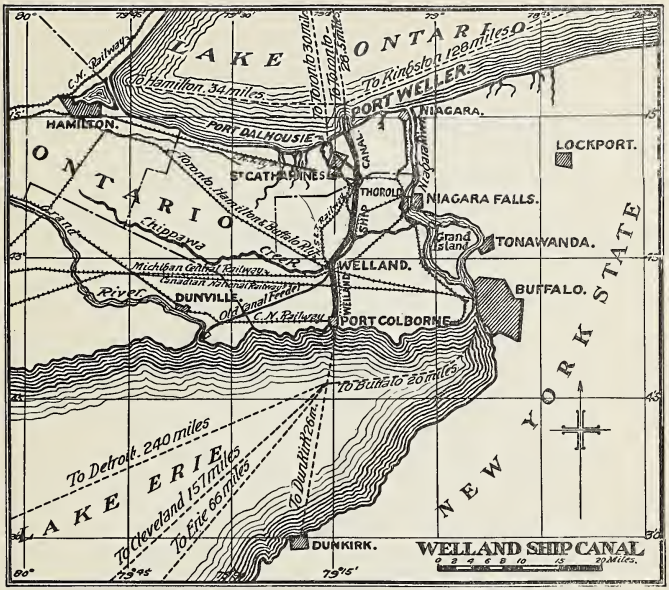
the Welland Ship Canal. Here, instead of lifting and letting down a cage, only the water floorway within the lock is raised and lowered. The engineer in charge allows water to enter a lock and the vessel within is gently floated upward. He slowly empties a lock and the ship within sinks gently downward.

Suppose we look at Lock Number One, a short distance north of Port Weller. It is a huge cement box as long as two city blocks, considerably wider than a city street and as deep as it is wide. Its exact dimensions are 800 feet long, 80 feet wide and 80 feet deep. Its bottom is bedrock, and, of course, it has no top. The south end is a huge iron door as tall and as wide as the lock itself. Another iron

door, as wide as the lock but less than half its height, forms the upper half of the north end. Cement work and bedrock complete the end of the lock below the half-sized iron door. The full-sized iron door swings outward into the lower canal. The half-sized iron door swings outward into the upper canal. If you cut an end of a shoe-box down one edge and then along the bottom so that it swings outward on the paper hinge formed by the remaining edge, and next cut the other end half-way down one edge and then straight across the middle so that the upper half swings outward while the lower half remains intact—you will have something which resembles a canal lock. If you now remove the ends from two other boxes somewhat wider than the first but less than half as high, place one box on a level with the bottom of the full-sized door of the lock and the other box on a level with the bottom of the half-sized door of the lock, you will have something which resembles sections of the lower and upper canals below and above the lock.

Suppose we now take a trip through the Welland Ship Canal from Port Weller to Port Colborne. Our vessel is a cargo boat on its way from Liverpool to Fort William. The entrance piers in Lake Ontario are about a mile and a half from shore, where the water in the lake is deep. A wide channel has been dredged from these piers to the foot of Lock Number One. Embankments each as wide as three roadways have been built from the entrance piers to the shore line on either side of the channel. The whole looks as though the canal has been widened and pushed out into the lake to form a splendid harbour.

Passing several ships lying alongside the embankment of the harbour, we arrive at the foot of Lock Number One. The full-sized iron gate is swung open and we sail into the ock. The gate is then swung to, and fastened. Our vessel is shut within a huge cement box whose walls rise above the top deck. The man in charge opens a valve. The water from a pond as large as a farm, and located above the head of the lock, begins to enter the lock from beneath. The



Courtesy of the Department of Railways and Canals, Ottawa

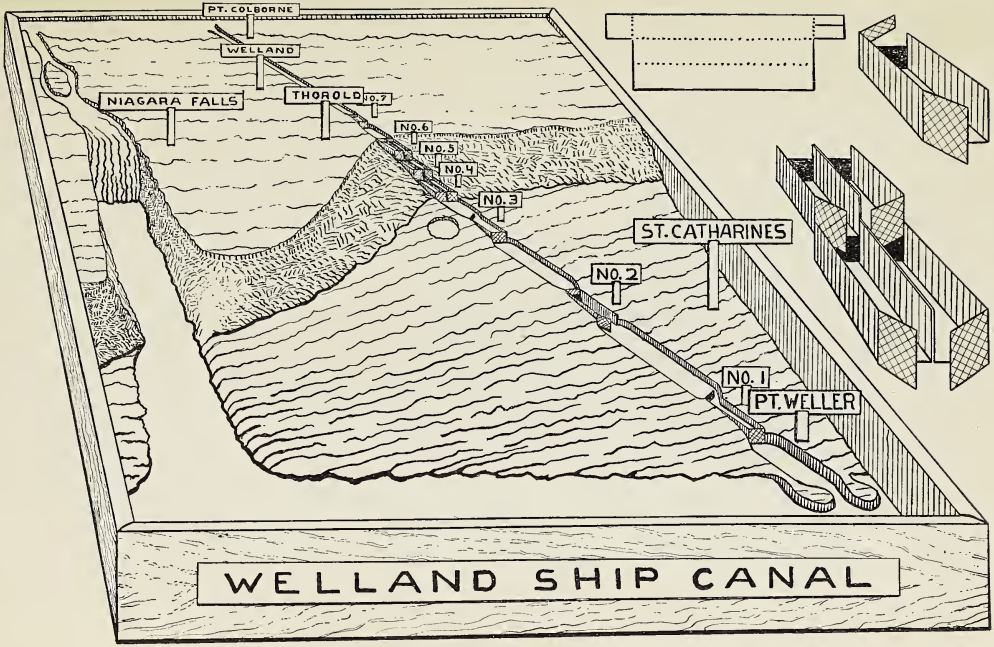
water floor slowly rises, lifting the ship with it. The country about opens to view as we rise higher and higher above the lock walls. In eight minutes our ship has been lifted 46½ feet. The water floor is almost to the top of the lock walls. So high do we ride and so quickly have we emerged from the box that we feel the boat may, any minute, topple over. But the half-sized iron gate at the head of the lock swings outward and we sail into the upper canal. A brief trip brings us to Lock Number Two, where our experience is repeated. At lock Number Three we have become so accustomed to rising sensations that we can view with interest the mountain of pulp logs in Merritton to our left.

We ascend the Niagara Heights at Thorold by means

of a flight of three locks which open one into the other with no canal stretches between. These are known as Locks Number Four, Five and Six. They differ from the other canal locks in the fact that each is a twin. Number Four, for instance, instead of being a single lock, is really two locks built side by side. In all there are three pairs or six locks on the face of the cliff. By this arrangement one vessel can ascend the heights while another descends. In fact, while we are going up we watch a grain boat on its way from Fort William to Prescott, going down. It is handled in just the opposite way to that in which our boat is handled. It enters a lock already filled with water. The lock is then emptied by opening a valve, and the vessel lowered to the level of the next lock beneath. The people on that boat must have the feeling of getting into a box just as we had the feeling of getting out of one.

A short distance beyond Thorold we pass through Lock Number Seven and enter the long level hallway of water leading to Lake Erie. At Welland the Welland River, or, as it is sometimes called, the Chippawa Creek, runs through six U-shaped tubes made of cement and as large as a room beneath the canal and up and out on the other side. Just outside of Port Colborne we pass through a lock called the Guard Lock. This lock is used to prevent the waters of Lake Erie, when they are high, from flooding the canal. On the left shore of the harbour at Port Colborne we see a huge nickel refinery and on the right shore the largest flour-mill in the British Empire. I look at my watch as we leave the boat and notice that we have been just eight hours and twenty-three minutes in making the trip through the canal.

As Canadians we should be proud of our pioneer forefathers, who had the courage to undertake, with the limited means at their disposal, such a huge project as the original Welland Canal. We should likewise be proud of the fact that present-day Canadians have built and now operate the second greatest canal in the world.



CO-OPERATIVE SAND-TABLE PROJECT BY CLASS

During the lesson Miss Goldenrule had the pupils cut and put together three shoe-boxes as described in the story. After the lesson the class, working in groups, made a sand-table picture of the Welland Ship Canal. The blue-painted bottom of the sand-table represented Lake Ontario. Lake Erie, the Niagara River and the Welland Ship Canal were represented by blue paper. The various locks were made by cutting, folding and pasting cardboard as shown in the diagram. Care was taken to rapidly narrow the river, canal and locks toward the background in order to create an appearance of distance. The various locks and towns along the canal were indicated by means of sign-posts.

In their Geography Story Books the pupils wrote an account of their trip through the Welland Ship Canal from Port Colborne to Port Weller. On the opposite page they pasted cut-out pictures of this or other canals.

Chapter XIX

OUR EARLY RAILROADS

"HOW does the dinner I swallow make my toes grow?" inquired a young friend on being told to eat his potatoes if he wished to become a big man. His mother, thereupon, tried to explain to her son how a wonderful transportation system, made up of blood vessels, carries food through its main lines and through its branch lines to every portion of the body. "We live," she said, "because every part of our body does business with every other part."

What is true of our body is likewise true of our Dominion. A nation is happy, prosperous and progressive only to the extent that all its people co-operate in the building up of the country. Such united effort is impossible where travel and communication are difficult. The early settlers in Canada tried to bring about a more effective co-operation by making roads and establishing sailing lines. But roads in those days were slow to build and slow to travel, and vessels could not reach the lands of the great interior. So shortly before Confederation your great-grandfathers undertook the building of railroads.

The first Canadian railway was built between St. John on the Richelieu River and La Prairie on the St. Lawrence River opposite Montreal. It was really a portage railway which enabled people, travelling from Montreal to New York by way of Lake Champlain and the Hudson River, to greatly shorten their trip. The rails were of wood with flat strips of iron spiked along the tops. Because rain and sun soon warped them they were sometimes known as snake rails. The first cars were drawn by horses. Later, an engine named *The Kitten* was imported from England. You would have considered it a curious affair. The

smokestack was as tall as the engine body and ended in an enormous crown. On a flat car behind the engine were carried piles of cordwood for fuel and a huge barrel of water for refilling the boiler. To make the run of sixteen miles took one hour.

The Grand Trunk Railway, the first long line built in Canada, was also planned as a portage road.

Canals had already been constructed by Canadian companies to avoid the St. Mary River Rapids, the Niagara Falls and the St. Lawrence River Rapids. It was hoped that trade on the Great Lakes, and more especially the wheat trade from the American west, would be carried by the river route to Montreal and there loaded upon ocean-going vessels. This would have made Montreal a great seaport. Unfortunately, the canals were so shallow that the larger grain boats could not travel them, and the locks were so numerous that much time was lost on the trip. Moreover, the St. Lawrence River froze over as early as December, and in those days there were no large elevators in which wheat could be stored during the winter. Hence the American grain growers in the west chose more speedy and more certain methods of shipping their autumn produce.

To capture this American wheat trade, an English company built the Grand Trunk Railway. From Sarnia the road ran through Stratford, Guelph, Toronto, Kingston and Brockville to Montreal. At Montreal it crossed the St. Lawrence by means of the great Victoria Bridge. From here it ran through Richmond and south to the American port, Portland. It was expected that grain from the American west would be shipped on large boats from Chicago through Lake Michigan and Lake Huron to Sarnia. Here it was to be loaded on freight cars and carried to the summer port of Montreal or to the winter port of Portland. This rail route avoided the shallow Lake St. Clair, the long Welland Canal and the several St. Lawrence River Canals.

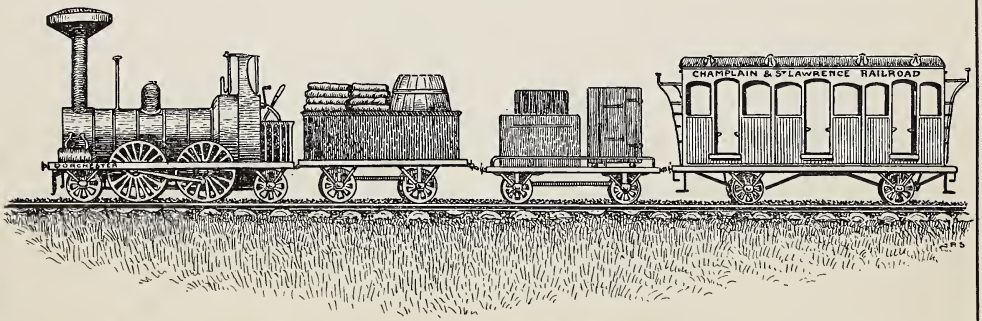
It also provided ocean ports for summer and winter shipment.

The road, though well planned, was never very successful. It was managed by a firm in England instead of by a firm in Canada, and a business does not usually prosper when the boss is away from the job. Also the company counted too much upon the American wheat trade and too little upon the development of business in its own Canadian territory.

Soon the Grand Trunk had to contend with several rival railroads, chief among which was the Great Western. The Great Western Company had built in Ontario a road shaped like a man. Its two feet were Sarnia and Windsor. Two legs extended from these feet to London. The body lay between London and Hamilton. At Hamilton two arms stretched out, the one to Toronto, the other to Niagara Falls. Later the Windsor leg was extended from its knee through St. Thomas to Buffalo. After years of bitter fighting the two systems were combined under the name of the Grand Trunk Railway. For many years this remained the chief railroad in Canada, though other —too many other—short lines were also built. Among these was the North Shore, from Ottawa to Montreal and along the north bank of the St. Lawrence River to Quebec.

Eastern Canada was no less eager to construct railroads. The great leader, Howe, induced his government in Nova Scotia to construct a line shaped like the capital letter T. The main stem ran from Halifax to Truro. The cross line ran from Windsor on the west through Truro to Pictou on the Strait of Northumberland. The government of New Brunswick took over and finished a line from Saint John through Moncton to the Strait of Northumberland. The Prince Edward Island government undertook to build a narrow-gauge railroad from end to end of the island. The contract ran the government so deeply in debt that the island was forced to enter Confederation.

THE FIRST RAILWAY ENGINE IN CANADA



CHAMPLAIN AND ST. LAWRENCE RAILROAD, 1837

ILLUSTRATION COPIED BY MARY FROM AN OLD DRAWING

On the blackboard, Miss Goldenrule began a Growing Map of Canadian Railroads. The Grand Trunk Railway was marked with green crayon. The Great Western was drawn with yellow crayon. As the story told how the latter road was united with the former, one of the pupils outlined the yellow route of the Great Western with blue crayon. The children laughed to see the Great Western yellow line turn into a Grand Trunk green line. The three Maritime roads were marked with light-blue crayon, and the North Shore with pink.

In their Geography Story Books, the pupils wrote the story of Our Early Canadian Railroads. The story was illustrated with a copy of the blackboard map. Mary, who had a fondness for old-fashioned things, also drew in her book a picture of the first Canadian train.

Chapter XX

THE TIES THAT TIED

DURING the period of early railroad construction, Canada was made up of several countries. All were colonies of Great Britain, but each had a separate government. Four, at first, of these brothers in the imperial family agreed to co-operate in building a greater Britain overseas, and united to form one British Dominion under the Confederation Act. To-day we shall see how that tie was likewise tied by means of railroad ties.

Even before Confederation it had been suggested that an intercolonial railway, that is, a railway which joins together colonies, would be a splendid thing to promote friendship and business and would likewise prove useful in time of war. Immediately after Confederation, the government of the newly-formed Dominion undertook to build such a road. From the Grand Trunk Railway it purchased a branch line from Rivière du Loup to Levis, opposite Quebec City. The New Brunswick government railway from Saint John to Moncton; the T-shaped Nova Scotia government railway from Halifax to Truro, Windsor and Pictou; and later the Prince Edward Island government railway were all taken over by the Dominion. Sir Sandford Fleming was named chief engineer and given the task of knitting these roads into one system.

At first it was proposed to construct a line connecting Truro and Rivière du Loup along the valley of the Saint John River. But this route lay in part not far from the American boundary. As a result of the Trent Affair and the Fenian Raids, Canadians of that day were somewhat distrustful of their neighbour. So the road was built along the east coast of New Brunswick through Campbellton, Bathurst, Newcastle, Chatham, and Moncton to Truro. This longer route increased the cost of transporta-

tion between Quebec and Halifax. Nevertheless, the road performed a useful service in connecting the provinces of the newly-formed Dominion.

Later, when British Columbia entered the Dominion, it was promised railway connections with eastern Canada. The Canadian government undertook to build such a road. Sir Sandford Fleming, chief engineer on the Intercolonial Railway, was given the task of making a survey for the new railway. He ran a line from near Ottawa, along the north shore of the Great Lakes to Fort William, and north of the Lake of the Woods to Selkirk. A branch line was to be built from Selkirk through Winnipeg, or Fort Garry, as Winnipeg was then called, to Emerson on the American boundary. This branch was to enable settlers in Manitoba to ship their produce by American roads until the new line should be completed.

The southern portion of the Canadian prairie was at this time thought to be a rainless desert. The country around Edmonton and Battleford which received greater rainfall was known as the Fertile Belt. After many toilsome months among the mountains of British Columbia, Sir Sandford Fleming decided that the Yellowhead Pass was the best gateway through the Rocky Mountains. So the survey was run from Selkirk through Battleford, Edmonton and the Yellowhead Pass, to the harbour at Vancouver and likewise to the harbour at Prince Rupert.

The government built the Selkirk, Fort Garry, Emerson branch, a short section eastward from Selkirk, a short section westward from Fort William, and a line between Kamloops and Vancouver. But the work proceeded so slowly that British Columbia became dissatisfied. The then premier of Canada, Sir John A. Macdonald, took the bold step of making arrangements with a private company to complete the road. For a grant of $25,000,000, 25,000,000 acres of prairie land and the construction already accomplished, the Canadian Pacific Railway Company undertook to build the then longest railroad in the world.

George Stephen, afterward Lord Mount Stephen, first president of the company, was the great business manager of the enterprise. He and his cousin, Donald Smith, afterward Lord Strathcona, another active member of the company, had some years before come out to Canada, poor lads from Scotland. Plain George Stephen, beginning life as clerk in a Montreal store, had risen to be president of the Bank of Montreal. Plain Donald Smith, entering the service of the Hudson's Bay Company and spending many hard years in far-away northern posts, had risen to be chief commissioner of that company. The success of the Canadian Pacific Railway rests in no small measure upon the character of its founders. To honest, hard-working, courageous-minded immigrants, Canada still holds forth tasks as difficult and rewards as golden.

The actual construction of the road was largely due to the ability of another great railroad man, Sir William Van Horne. The eastern section of the road had been started from Pembroke westward before he assumed control. He turned his attention first to the prairie section. The plan of Sir Sandford Fleming would, he saw, force settlers in the southern part of the prairie to ship their produce over American railroads. To save this trade and perhaps this territory for Canada he ran his line through Winnipeg instead of through Selkirk, and through Regina and Calgary rather than through Battleford and Edmonton. Track was laid at the rate of from two to four miles a day through an unsettled country to which every pound of food and every stick of timber had to be hauled enormous distances.

This change of plan forced Sir William Van Horne to hunt for a new passage through the Rocky Mountains. He chose the Kicking Horse Pass, shorter, though steeper, than the Yellowhead. Miles of rock cut, miles of trestle-work and miles of bridges had to be constructed in the mountain section. Miles of snowsheds were built, over the roofs of which avalanches might shoot without damage

to the tracks beneath. At Kamloops the line joined with the government-built road to Vancouver on Burrard Inlet.

The partly-constructed government road between Fort William through Kenora to Winnipeg was completed and extended eastward. Construction from Fort William through Port Arthur and Sudbury to North Bay gave Sir William Van Horne almost as much trouble as the British Columbia section. Rocks were tough. Muskeg swamps seemed bottomless. Across one piece of muskeg six layers of track lie buried one beneath the other. But with heroic courage the men pushed on. Amid the mountain wilderness of British Columbia Lord Strathcona drove the last spike five years before the contract time had expired. Vancouver was tied up with the older railway systems near Pembroke. The Canadian Pacific Railway was complete.

Not so! That canny Scot, Lord Mount Stephen, had no intention of leaving one end of his road hanging in the air. Long before the last spike was driven by his cousin, Lord Strathcona, he had quietly purchased a road from Pembroke to Ottawa and bought the North Shore line running from Ottawa through Montreal to Quebec. Now he partly built and partly purchased a road from Montreal, through Sherbrooke, across the American State of Maine to the winter port of St. John. The Canadian Pacific was a transcontinental road stretching from ocean to ocean!

With the completion of construction, the difficulties of the company were by no means at an end. A railroad has to be operated effectively as well as built successfully. Much of the territory through which the new line ran was unsettled and afforded neither produce for freight cars nor travellers for passenger coaches. The story is told that, in a desperate effort to secure revenue, the management ordered its men to gather buffalo bones from the prairie and ship these east to soap factories and fertilizer plants. An emigration department was added to the company. As a result of its efforts, a stream of settlers was soon

moving westward to locate on the rich farming lands of the great Central Plain. With the opening up of the country there was established a traffic in settlers' effects to the west, and grain to the east. And the company entered into a well-earned period of prosperity.

Many branch roads have since been constructed, many hotels and elevators have been built, large steamship lines on both the Pacific and the Atlantic have been acquired, until to-day the Canadian Pacific Railway is the greatest transportation company in the world.

Upon the Growing Map of Canadian Railroads the pupils marked with red crayon the various sections of the Canadian Pacific Railway, as it developed. The pink North Shore line was changed to red. The Intercolonial was indicated with blue crayon, a colour which corresponded with the Maritime government railroads taken over by that system.

These new lines were added in coloured crayon to those previously drawn on the railroad map in their Geography Story Books. The story of The Ties That Tied was written, and illustrated by cut-out pictures showing railway builders at work.

Chapter XXI

THE SECOND STOREY

TWO weeks ago the masons were laying the foundation for the new house which is being built on the road back of the school. Last week they constructed the first storey. This week they are working at the second storey. Perhaps in another week they will be building the attic.

The early railroads and the Canadian Pacific Transcontinental were built near the southern boundary of Canada. Settlements grew up about these roads, with the result that the population of the country extended in a long, narrow band from coast to coast. This area made up the first storey of our Dominion home. A second storey was added by building railways through the unsettled country to the north.

The Grand Trunk Company were astonished at the success of the Canadian Pacific. They were dismayed when the latter partly built and partly purchased a line through the very heart of the Grand Trunk territory from Montreal through Peterboro, Toronto, Galt, London and Chatham to Windsor. Thereupon the Grand Trunk management was moved from England to Canada. An American railroad man, Charles M. Hays, was chosen manager. Since the Canadian Pacific had invaded his territory, Charles M. Hays determined to invade their western area. Sir Wilfrid Laurier, Premier of Canada, saw the possibility of a second storey of population being developed to the north of the first. So the government of Canada and the Grand Trunk Company agreed to build a second transcontinental railway to be known as the Grand Trunk Pacific.

The company constructed the road from Winnipeg westward through Saskatoon to Edmonton. The Rocky Mountains were crossed by means of the Yellowhead Pass.

From here the road followed the old Sandford Fleming survey to Prince Rupert. A Pacific terminus and port were built about this splendid natural harbour at the mouth of the Skeena River.

The government built the road eastward through the Clay Belt of northern Ontario and Quebec to Quebec City. The need and value of this portion of the road was greatly criticized. However, hundreds of settlers are locating on the fertile lands of the Clay Belt. Pulp-mills are being constructed and rich mineral areas opened up. After two unsuccessful attempts, a great bridge was built across the St. Lawrence River above Quebec City. The bridge consists of two huge rocking-chair spans, each resting upon a solid foundation built out from shore. The shore end of each rocking-chair span is securely anchored to the land. A central connecting span joins the river ends of the rocking-chair spans. Across this bridge the road was continued so as to graze the upthrust nose of the State of Maine and thence through Edmundston to Moncton, where it connected with the Intercolonial running to Halifax.

The other day you heard how two poor Scottish lads, George Stephen and Donald Smith, came to Canada, made good and helped to build a great transcontinental railway. Two poor Canadian lads did something still more wonderful. They not only built but likewise owned a Canadian transcontinental line.

William Mackenzie began life as a teacher in an Ontario country school. Donald Mann, also an Ontario boy, at the age of sixteen hired out to a lumber camp. Later both entered the railway construction business. Both went west and helped to build many branch lines for the Canadian Pacific. The partnership of Mackenzie and Mann was formed and for many years did a successful contracting business.

The government offered large land grants for a railroad running from Portage la Prairie to the Manitoba Lakes. The partners undertook to build and operate the road.

They next built a line from Winnipeg to Port Arthur, running to the south of the Lake of the Woods and dipping at that point slightly into American territory. They leased the Canadian portion of a bankrupt American road which had been built northward into Manitoba. This road connected their two other lines and gave them many branch lines in Manitoba. The Canadian Northern, as the new road was called, suddenly became the third largest railway in Canada.

The road was pushed westward through North Battleford to Edmonton and many branch lines were built throughout the Prairie Provinces. Suddenly the partners announced their intention of constructing a third transcontinental. From Edmonton a line was built along the old Sandford Fleming survey, through the Yellowhead Pass, Kamloops and New Westminster into Vancouver. A road was constructed from Port Arthur between the Grand Trunk Pacific and the Canadian Pacific to North Bay and from there to Ottawa. A line from Ottawa to Quebec City was purchased and the third transcontinental road was completed.

Then came the Great War. Prices rose and the newly-constructed roads found themselves in money difficulties. The Canadian government took over the Canadian Northern and the Grand Trunk Pacific together with the old Grand Trunk, and united them with the Intercolonial to form the largest railway system in the world. It was called the Canadian National Railways, and is operated by the Canadian government. Such is the story of the second storey.

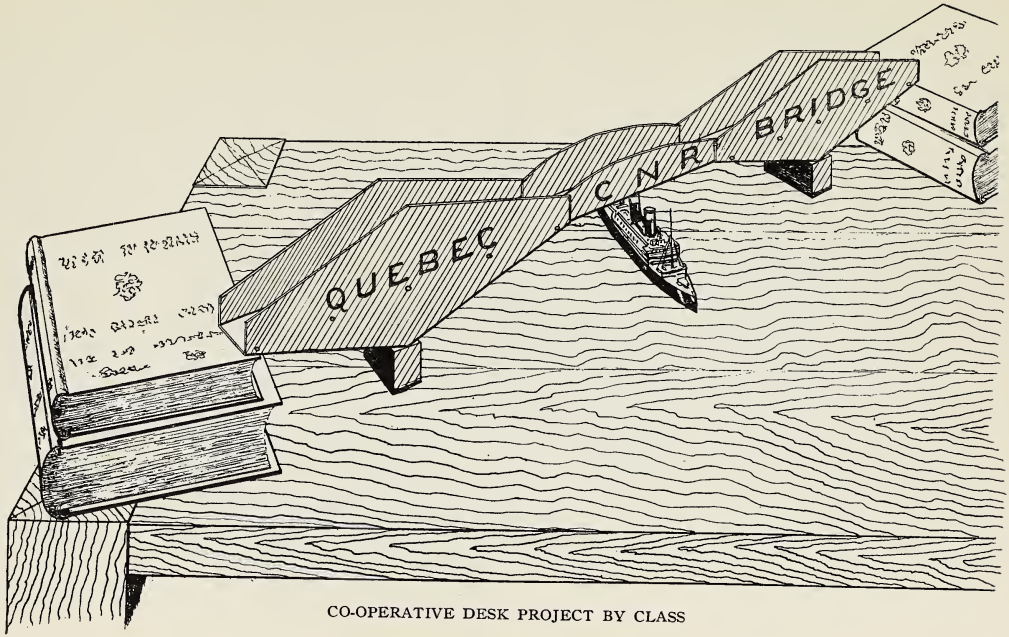
Will there be a third railway storey to our Dominion home, or will our great North-West be built up as an attic upon the second storey? That depends largely upon the boys and the girls who are reading this book. The Canadian National Railroad have just completed a line from Hudson Bay Junction across the Saskatchewan River at The Pas to Churchill on Hudson Bay. It is hoped that

much of our prairie wheat may be shipped by this short route to England. Branches are being pushed northward along the Athabasca and Peace rivers. Should the country to the north prove as fertile, as rich in minerals and as wealthy in forests as many think, perhaps you may be engaged some day in adding a third storey to our wonderful Dominion home.

On the Growing Map of Canadian Railroads, the Grand Trunk Pacific was marked with green crayon and the Canadian Northern with dark-blue crayon. When in the story it was told how the Canadian government took over and combined four systems to form the Canadian National Railways the pupils overlined with yellow crayon the light blue of the Intercolonial and the dark blue of the Canadian Northern. As a result the Canadian National Railways were now all shown in shades of green.

In their Geography Story Books the pupils wrote The Story of the Second Storey and completed the railroad map of Canada in coloured crayon.

At home that evening, Bob, Mary and several of their school friends made a model of the Canadian National Railway Bridge above Quebec City. Two pair of long diamond-shaped pieces of cardboard were cut out for the rocking-chair spans. The sharp points on each were squared off. Two oblong sheets of cardboard were then cut out for the floors of the rocking-chair spans, and fastened with long pins between the pairs of diamond-shaped pieces. To form the centre span another oblong sheet was cut out and turned up at the sides. The following day the bridge-builders piled two rows of books on Miss Goldenrule's desk to represent the banks of the St. Lawrence River. The rocking-chair spans were set on foundations of plasticine, and anchored at one end to the row of books. The centre span was then put into place. The boys and girls felt very proud when the teacher asked if she might put the model among the School Geography Collection.



CO-OPERATIVE DESK PROJECT BY CLASS

Chapter XXII

THE ROYAL TRAIN

"THE PRINCE OF WALES," said Miss Goldenrule, "is about to cross Canada from Saint John to Vancouver by way of the Canadian Pacific Railway. I think it would be a splendid idea for the mayor of each city along the route to extend to him an address of welcome."

"I know what you are going to do, Miss Goldenrule," said Jake Stainhan, as he blotted the last paragraph in his Story of the Second Storey, closed his book and sat back to listen. "You are going to give us a review lesson on the railways."

"Perhaps, Jake!" replied the teacher. "Perhaps, again, I shall be helping to make you some day a worthy mayor."

Twenty-four names were chosen from the public-speaking list on the blackboard. From a box in her cupboard Miss Goldenrule took twenty-two cardboard buttons, twenty-two cardboard flags, and two tiny silk flags of the United States. Printed upon each cardboard flag and about the circumference of each cardboard button was one or other of the following names: Saint John, Sherbrooke, St. Johns, Montreal, Ottawa, Pembroke, North Bay, Sudbury, Port Arthur, Fort William, Kenora, Winnipeg, Portage La Prairie, Brandon, Regina, Moose Jaw, Medicine Hat, Calgary, Banff, Kamloops, New Westminster, Vancouver.

Each cardboard button was as large around as an ordinary ink bottle and was furnished with a bent pin through its centre. One was handed to each of the twenty-two mayors to be pinned to the front of his coat or her dress. Each mayor was asked to prepare for the following geography lesson a speech not to exceed one minute in

length. The speech was to begin, "Your Royal Highness," was to extend to the Prince a brief welcome, and was to describe to him the chief items of interest in the city or its vicinity. One of the tiny silk flags was given to a pupil who was to represent the American Secretary of State. She was to meet the Royal Train as it entered the American State of Maine and in a one-minute speech to welcome the Prince on his brief journey through the United States. The Prince was to make a short speech in reply to the American Secretary of State, but was to thank in a sentence only each mayor for his or her courtesy.

The twenty-two cardboard flags and the remaining small flag of the United States were given to a pupil who was to represent the General Passenger Agent of the Canadian Pacific Railway. She and her assistant were to draw with red crayon the main line of the Canadian Pacific Railway, the full length of the blackboard. The Pacific Ocean, Lake Winnipeg, Lake Superior, the Ottawa, St. Lawrence and Saint John rivers and the Bay of Fundy were to be shown and named in blue crayon. The Rocky Mountains were to be indicated in brown crayon and the nose of the State of Maine in purple crayon.

The mayors of the various cities, together with the American Secretary of State, were to be seated in the four front rows of seats. The Prince, accompanied by his aide, was to make the trip across the front of the room in the same direction as the route pictured on the blackboard. Each time the Royal Train stopped, which as a matter of fact was after every step, the General Passenger Agent was to announce the name of the place, while his assistant fastened with plasticine in its proper place on the blackboard route the flag bearing the name announced.

Jake Stainham had been chosen to represent the Prince, Bill, Bob's chum, the Prince's aide, and Mary, the mayor of Saint John. When the geography period opened the following day, Bill appeared with a wooden sword girt to his left side. Jake had three feathers fastened to the

ribbon of his straw hat. In answer to the teacher's look of inquiry, he stated that the Prince of Wales wore a crest of three feathers. Several of the girls protested. They said that the Prince, when travelling, did not wear feathers, that they should be ostrich, not hen, feathers, and that a Prince would not wear a hat while listening to a speech. Finally Jake solved the difficulty by ordering his aide to carry the hat, much to that gentleman's disgust. The lesson itself was conducted most seriously. Early in the term the pupils had discovered to their sorrow that to behave rudely during an interesting lesson meant the immediate ending of that lesson and a return to more ordinary work.

"Saint John!" announced the General Passenger Agent, when all were ready. His assistant fastened to its proper place on the blackboard map the flag bearing the name Saint John.

"Your Royal Highness, permit me to present to you Her Worship the Mayor of Saint John," said the aide.

"I am charmed to know Your Honour," replied the Prince, extending his hand in accordance with the form of greeting decided upon the previous day.

"Your Royal Highness," began the Mayor, "the citizens of Saint John and the people of New Brunswick are glad to welcome you again to Canada. Our province and this, the capital city of our province, were founded by the United Empire Loyalists. No people have been more loyal to the British throne than their descendants.

"We are sorry that your plans will not allow you to spend more time among us. We should have been proud to show you the wonderful Reversing Falls on the Saint John River; the huge grain elevators which store wheat to be shipped to the British Isles; one of the largest dry-docks in the world; our sugar refinery, our lumber mills, cotton mills, foundries and other interesting sights. We wish Your Royal Highness a pleasant journey across one of the

fairest dominions in the British Empire, and a safe return to the land which we are proud to call the Motherland."

"Thank you for your warm welcome and your kind wishes!" replied the Prince, and the Royal Train proceeded.

On his entrance into the State of Maine the Prince received most cordial greetings from the American Secretary of State, to whom he made an equally courteous reply. At Calgary he was greeted enthusiastically. The mayor of that city hailed him as Alberta's leading citizen and complimented him upon the prosperous condition of the E. P. Ranch. Nevertheless at the end of the trip Jake Stainham gave a sigh of relief.

"If the Prince has to listen to speeches all day long, I don't want his job," Jake said.

At the conclusion of the lesson Miss Goldenrule packed the buttons and flags in a box in her cupboard to be ready for the class of the following year. Before the cardboard flags were packed, the pupils were given a short drill exercise. Sides were chosen. The flags were mixed by the teacher and spread face down upon a bench in front of the blackboard. One member from each side came at a time to the front. At a given signal they began to fasten the flags in their proper places on the blackboard map. A side was given one mark for each flag properly placed by its representative.

"In the next geography lesson," said Miss Goldenrule, "we shall find out how the Prince returned to the Atlantic coast by a Royal Train which travelled over the Canadian National Railway. He made the first part of his trip, however, by boat from Vancouver to Prince Rupert, the vessel stopping at Powell River, Ocean Falls and Swanson Bay. At Prince Rupert an account of the trip was sent out by radio. At Edmonton, Winnipeg, Ottawa, Montreal, Campbellton, Moncton, New Glasgow and Sydney, other accounts were sent out. Before embarking on a cruiser at Sydney, for his return to England, the Prince spoke over the radio to all the Canadian people.

"So far," continued Miss Goldenrule, "our public speeches have all been prepared beforehand. But in the real world people frequently have to speak with little or no preparation. Such speeches are said to be impromptu. I think we might have some practice in impromptu speaking."

It was arranged that the pupils should review the geography of the following towns and their surrounding districts: Powell River, Ocean Falls, Swanson Bay, *Prince Rupert*, Jasper, *Edmonton*, Wainwright, Saskatoon, Melville, Portage la Prairie, *Winnipeg*, Cochrane, Cobalt, North Bay, Pembroke, *Ottawa*, *Montreal*, St. Hyacinthe, Drummondville, Levis, Rivière du Loup, *Campbellton*, Bathurst, Newcastle, *Moncton*, Sackville, Amherst, Truro, Stellarton, *New Glasgow*, Port Mulgrave, Sydney Mines and *Sydney*. Each was to be prepared the following geography lesson to represent either the Prince giving his farewell address at Sydney or else one or other of the nine newspapermen broadcasting from the radio stations along the way.

Mary was appointed General Passenger Agent of the Canadian National Railway, and another girl was chosen to act as her assistant. These two were to draw with green crayon the main line of the Canadian National Railway the full length of the blackboard. The Ontario Government Railway from Cochrane to North Bay was to be drawn in purple crayon. The Pacific Ocean, Lakes Winnipeg, Superior and Nipigon, the Ottawa, St. Lawrence and Saint John rivers, the Bay of Fundy, the Strait of Canso and the Gulf of St. Lawrence were to be shown and named in blue crayon. The Rocky Mountains were to be indicated in brown crayon.

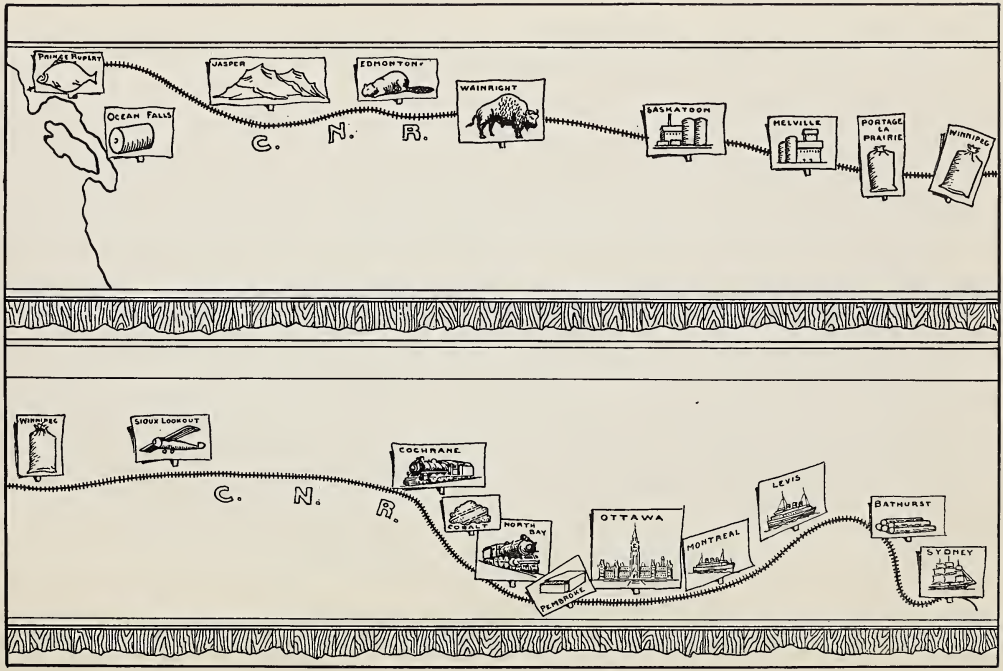
From a box in her cupboard Miss Goldenrule took a number of cardboard bill-boards which either had been cut to represent certain objects or else had pictures pasted upon them. Printed in bold black letters across the face of each was the name of one or other of the above-mentioned

stations. Powell River, Ocean Falls and Swanson Bay were represented by pictures of pulp-mills. A cardboard cut in the shape of a halibut stood for Prince Rupert, a cut-out mountain for Jasper, the picture of a beaver pelt for Edmonton, the picture of a buffalo for Wainwright, of an elevator for Saskatoon, of a flour-mill for Winnipeg, etc. The General Passenger Agent was instructed to fasten with plasticine at each of the above-mentioned stations on the blackboard map its proper bill-board. This work was to be done during the noon hour before the geography lesson began.

At the beginning of the geography lesson Miss Golden-rule took from the cupboard, and fastened with plasticine to the cork of a tall ink bottle on her desk, a cardboard disc made to represent the transmitter of a radio set. A pupil was chosen to represent the newspaperman speaking at Prince Rupert. Opposite his name in the public-speaking list on the blackboard the letter "I" was marked, to show that he had made one impromptu speech. The speakers who followed had similar records made opposite their names. The first two or three speakers were chosen by the teacher from among her coolest and brightest pupils. This was done to inspire the class with confidence in their ability to carry on the new method of public speaking. The first-chosen pupil came to the front and, speaking in a slow, distinct voice, addressed the transmitter:

"Ladies and Gentlemen, this is station CJCA, Edmonton, broadcasting by hook-up from Prince Rupert.

"The Prince of Wales arrived safely this morning by boat from Vancouver. He left that city early last Monday morning and followed the smooth inside passage between the islands and the coast. The vessel stopped at Powell River, Ocean Falls and Swanson Bay. While supplies were being unloaded at these ports, the Prince left the boat and visited several pulp-mills, sawmills and salmon canneries. He was astonished at the size of the logs and at the quantity of fish. The beautiful blue inlets and the towering, snow-



CO-OPERATIVE BLACKBOARD PROJECT BY CLASS

clad mountains along the coast gave him much pleasure. He remarked that the scenery was even more beautiful than that along the shores of Norway. This afternoon he watched the halibut fleet come in with loads of broad flat fish. Later in the day he visited the plant where these fish are prepared for shipment.

"I thank you for your kind attention."

Miss Goldenrule was very proud of the manner in which all her speakers conducted themselves that afternoon. She said she was sure that they would grow up to be men and women who could take their part in public discussions.

After the Prince had departed on his cruiser, the class chose sides and played a placing game with the bill-boards in much the same way as they had played the game with flags during the previous geography lesson.

After the first lesson, the pupils wrote in their Geography Story Books a newspaper account of the Prince's journey over the Canadian Pacific Railway. A picture of the Prince was pasted in their books to illustrate the account. A newspaper account was also written about his journey over the Canadian National Railway. This story was illustrated by a drawing of the bill-boards along the route.

Chapter XXIII

STORY OF THE FIVE GRAINS OF WHEAT

"WELL, if it isn't the Colonel!" shouted four tiny voices, as a plump grain of wheat, after hopping off a conveyer belt, bounding from the side of a huge bin, shooting dizzily downward through space and scooting along a hard cement floor, at last came to rest in a secluded corner of a Liverpool flour-mill to find itself fifth of a cuddled company.

Long ago his fond mother-stalk on a far-away Saskatchewan farm, noticing what a bouncing baby had been born in the fifth nest on the fourth circle of the family head, had spoken of him as *the* kernel. Though his real name was Dizzy, since that time he had been known by his twin brothers and twin sisters as the Colonel. They, having likewise been reared on the fourth circle, bore, in accordance with ancient custom, names which began with letter D. There were Downy with the fuzzy head, Doughy whose starch and gluten muscles were hard and clear as china, Dimple with the deep smile, and Dot whose cheek had been slightly scarred from an old grasshopper bite.

"This is a coincidence!" exclaimed Dot, who, to make up for the mar on her beauty, had developed a remarkable conversational ability. "Just to think that we five, born and brought up in the same wheat head on a prairie farm near the far-off city of Saskatoon, should after distant adventures meet once more in the very stomach if not the very heart of the British Empire!"

"Hear! Hear!" said Miss Dimple, deepening her pert smile. "Now, Big Brother, tell us all about yourself!"

"Yes, do, old man!" chimed the twin boys.

"I must say this reunion stirs me to the very sprout,"

replied the Colonel, rubbing his nose violently on a convenient bag string.

"Mine is but an ordinary story," he continued after a moment. "However, I shall be glad to relate it, provided you in turn tell yours.

"Need I remind you of the time when we were fat green babies sleeping through long summer days and cool quiet nights in cradles of tender chaff? Or how we were rocked to the tune of passing prairie winds by our graceful mother-stalk? Or the day when the terrible grasshopper bit through the curtain about Dot's cradle and threatened the lives of us all until we were rescued by a police-bird who flew off with the wretch in his beak? Or how our soft milky bodies hardened to starch and gluten muscles and our green skins browned to an August tan?

"Even as we rejoiced in our strength came the day of destruction. All morning we had been troubled by a hideous din which now approached like growing crackles of thunder and now drew away in distant muttered rumblings. Toward noon a great beast, clad in clanking armour, snorting blasts of smoke and whirling its arms like a mad thing, invaded our neighbourhood. Beneath its swirling paws thousands of mother-stalks were struck down. Gnashing teeth severed their necks; voracious jaws devoured their heads, leaving the poor broken bodies to writhe in agony behind the monster's tread.

"I have since learned that such a beast is a combine, a man-made creature propelled by a tractor and serving the purpose of both harvester and thresher.

"We were all dreadfully frightened, but as the noon hour wore away and no further sounds were heard we began to pick up courage. Our hope, however, was short-lived. About one o'clock distant rumblings again filled the air, growing louder and louder as the beast approached. We felt our end was near. Remembering my military honour, I managed to control a panicky horror, and

prepared myself to take advantage of any opportunity to escape.

"Along with many others our mother-stalk was struck down by a whirling paw of the enraged invader. I heard her groan as a saw-like tooth severed her slender neck. The victims' heads, caught by the protruding lower lip of the beast, were drawn toward its mouth. A shorter upper lip united with the lower to hoist us into that cavity. Even in that dire moment I noticed with wonder the unusual location of the creature's mouth to one side of its body, and that both lips were made of a canvas-like stuff laid with carrier slats.

"In the mouth of the monster a second pair of lips seized us and swallowed us upward and backward. As we emerged from this curiously-formed throat, four wide flail-like tongues forced us down into the creature's gizzard—a fearsome affair indeed. A steel cylinder frame, formed somewhat like a banana crate and armed with eight rows of spikes, revolved in such fashion that its under-part turned within the curve of a trough-shaped frame likewise armed with spikes and called a concave. The wheat heads were rubbed between the moving cylinder spikes and the stationary concave spikes and so threshed out.

"I remember seeing Dot's cradle torn to bits and hearing her shriek as she fell between the bars of the concave. I myself clung desperately to the head stalk and, though my bed was ripped to pieces, managed to retain my hold. Doughy also was able to keep his place in the shattered wreck of our head as it passed through the gizzard. We were the only survivors.

"Our escape, however, profited us but little. On emerging from the gizzard the battered heads were thrown down upon a travelling straw rack, torn to pieces by revolving pickers, blown about by blasts of air from a fan and pounded by weighted beaters. Doughy lost his grip beneath the first flail and I saw him no more. The second set of pickers loosened my hold. The bruised old family

head, bereft of its children, was blown out of the end of the machine along with bits of straw and chaff.

"I fell through the slats of the travelling straw rack, slid forward along the separator bottom, slipped through the mesh of a sieve and found myself in a bath where my body was washed free of dust and dirt in the blast from a huge fan. An elevator carried me to an upper bath where I received a second air shampoo. From this room I passed with a host of other bright, clean grains through a spout and into the steel tank of a tank wagon which a pair of horses kept moving side by side with the combine. When the tank had been filled with grain, the combine stopped, we drove ahead, and another wagon took our place.

"Exercising my military ingenuity, I managed to gain a place on top of the load. From this vantage point I was able to view the havoc of battle. Already the combine had recommenced its murderous inroads. In the distance a burying machine, called a tractor plow, was turning under the chaff, straw and broken stubble. A few minutes later the din of war died away, and our horses turning down a pleasant prairie trail, we began a triumphal march.

"In something under two hours' time we bumped over a railroad crossing and stopped in line behind several other wagons. Between the wagon line and the railroad tracks was a large frame building with a square central tower. The structure looked not unlike a row of three blocks, on the middle one of which a fourth block had been placed. Along the side of the tower was printed in huge letters:

SASKATCHEWAN WHEAT POOL
COUNTRY ELEVATOR

A spur line from the railway tracks ran along the far side of the elevator. On this siding were several freight cars bearing the name CANADIAN NATIONAL.

"This much I noticed while we waited. Then the line of wagons moved forward, stopped, and moved forward again. After several such movements our wagon came to

rest upon a weighing platform. The man in charge gave the driver a slip upon which was stated the weight of the loaded wagon, the weight of the empty wagon, and the resulting weight of wheat. The wagon was then backed over the mouth of a chute. A trap in the tailboard was opened and the wheat emptied into a tank at the base of the tower. From here we were elevated, by means of travelling buckets fixed on an endless chain, to the upper part of the tower and poured along a trough into a bin on the left side of the building. From the conversation of my fellow travellers I judged that all the wheat in this bin had been grown on the one farm.

"We did not remain long in the bin, but were soon passed through a spout into one of the freight cars waiting on the siding. As the car filled a man levelled the grain with a shovel and closely boarded up the insides of the two doors to prevent any adventurers from crawling out. I entered when the car was slightly more than half full, and greatly feared lest a continuing stream of grain should bury and smother me. But my rank must have been speedily recognized, since no sooner had I found a comfortable seat on top of the heap than the spout stopped flowing and the man climbed out of the nearly boarded-up door, leaving things in my charge. I heard him close and seal the car doors. Then an engine took us in charge and we rolled away to a clicky-clack marching tune played by the car wheels."

"Nothing worthy of note took place until after several days' journey we arrived in Winnipeg. At Portage la Prairie a false rumour had spread throughout the car that we were to be taken to the mills of that city and ground into flour. But when we were shunted onto a siding at Winnipeg and heard a man break the seal and open the door, we were certain that our trip had ended. However, the man did nothing more than climb into the car and stab about all over the heap with a long instrument which swallowed a

small mouthful of grain at every poke. He then emptied the wheat from the stabber into a little bag which he ticketed and tied. The car door was again closed and sealed and in a short time we were bumping over the rails once more.

"Later I learned from one of my command, who had been made a prisoner and afterwards released, that the man was taking samples of the wheat in the car for the Canadian Grain Commissioners. He said that the bag was carried to a large room and emptied upon one of many tables. The samples were weighed, examined under a microscope for weed seeds, and tested as to their moisture content. Because the grain in our car was dry, clean and weighed sixty-four pounds to the bushel, we were classed as number one hard, which he assured me was a high honour. He also informed me that all Western-grown wheat is inspected by the Grain Commissioners, who furnish a report to the shipper and likewise to the terminal elevators (a word whose meaning I was soon to learn). The price received by the farmer for his wheat is determined by the grading which the Commissioners give. You will notice, dear brothers and sisters, how careful I am while travelling to obtain valuable information.

"After two days' and two nights' travel we halted in the C.N.R. yards just outside of Fort William. From my commanding position on top of the load of grain I was able to peek through a crack in the car door and behold with wonder the far blue waters of Lake Superior and the rocky outlines of the Sleeping Giant guarding the harbour waters of Thunder Bay—a vision indeed to a prairie-born grain of wheat. Then our car was shunted onto a siding and began to run under its own weight down a long slope toward the waterfront. As far as eye could see, huge elevators like castles of storyland lined the shore. Rapidly we neared one of the largest on the Port Arthur side of the harbour. Seven rows of thirty enormous cement bins were

arrayed to form its left arm and as many more its right. Written in huge letters I read:

SASKATCHEWAN WHEAT POOL
TERMINAL ELEVATOR NO. 7

Between the two arms centred a great receiving station beneath whose roof we stopped.

"A man unsealed one of the outer car doors and slid it open. Then he thrust an arm over the boarded-up entry and seized a handful of grain. I found myself one of the entrapped, but with true military dexterity managed to effect a retreat between his finger and thumb and dropped to the floor.

"While but a youngster I had witnessed a farmer tap the bowl of his pipe against his hand to knock out the ash. But not until it happened could I have supposed a huge freight car might be picked up and emptied of its content in a fashion as easy and a time as brief.

"From my resting-place I saw our car being pulled by means of a cable onto a track which ran along the top of a movable platform. The opening to a cellar-like cavern yawned on the right-hand side of the platform. When the car had been moved to the centre of the track a huge steel arm, ending in a half-opened hand, arose from each end of the platform and seized the coupling heads. A third steel arm came slowly up from the middle of the right side and with its clenched fist crushed in the boarded-up opening of the car door. Thereupon half the grain spilled out and fell into the cellar. Another steel hand thrust an immense blade along one edge of the door and angle-wise across the floor to the opposite car wall. The movable platform was then swung about its middle so that the far end of the car, tilting upward, poured its content against the slanted blade and out into the cellar. The near end of the car was emptied in similar fashion. At that moment a man with a broom swept myself with other loiterers into the cavern and I saw no more.

"Somewhere on my travels I have heard that the children of men dread Saturday night because of the dreadful scrubbings they then receive. I can sympathize with them. Our experiences in the combine were as nothing compared with the cleaning we were given in that terminal elevator.

"The whole carload of wheat was weighed. Then by means of travelling buckets fixed to an endless chain we were carried to the top of the central receiving station, dumped, and passed down again through one cleaning machine after another. Within two minutes I had been so bumped, tossed and shaken about that my wits quite left me. Dimly I remember slipping through screens for removing straw, skidding across screens for separating weed seeds and tobogganing over screens for sifting out shrivelled grain. My skin was rubbed raw in a dry-cleaning machine and then towelled in an air blast until it shone. At last I found myself rollicking along a hollowed conveyor belt which glided between sets of U-shaped pulleys toward a second weighing tank. Here the carload of wheat was given its final weighing inspection and grading.

"As we proceeded along another conveyor belt to one of the huge cement bins, I heard a man say that we were to be shipped by the next Canadian Steamship Line boat for the Liverpool market. And indeed we had scarcely been in the bin a week when I found myself with a multitude of others hurried downward through a long spout. As I emerged from its mouth I glimpsed at least eight other streams of wheat being poured into the deep, dark hold of a vessel. Then an avalanche of grain smothered me beneath its weight.

"A sickness due to want of air or induced by a continued heaving motion of the boat now seized me and my memory is vague as to the happenings of the next few hours. I was aroused at length by a whispered conversation carried on among the ship's timbers. A creaking, grumbling, rumbling

sort of language it was, but my military training soon enabled me to pick up its meaning.

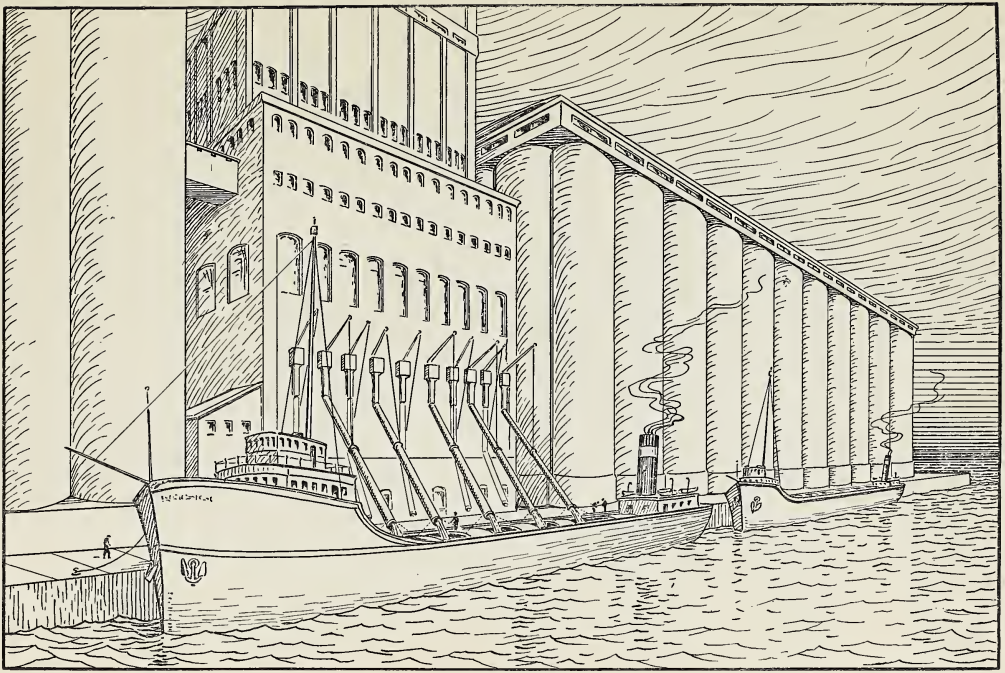
"From this muttered conversation I gathered that certain strange hooting sounds were the calls of passing vessels upboard through Lake Superior. Quite apart from any statement of theirs, a sinking sensation in my stomach made me aware of our passage through the locks at Sault Ste. Marie. After a somewhat tedious voyage down Lake Huron, the St. Clair River, Lake St. Clair, the Detroit River and Lake Erie, I experienced seven similar sensations in going through the Welland Ship Canal. Lake Ontario was a bit rough and I was glad when we entered the more peaceful waters of the St. Lawrence River.

"At Prescott the feet of nine long, hollow legs were thrust through the hatches into the hold of the boat. Travelling buckets working within these hollow legs scooped us up and carried us to a bin in a large public elevator. From here we were transferred by spouts to the hold of a much smaller steamer. Though the timbers of this boat spoke with a French accent, I gathered from their conversation that a transfer from large to small vessels was necessary because of the shallower canals along the St. Lawrence River. At Montreal we were again legged into a public elevator, to be again spouted through hatches into the hold of a boat, this time an ocean-going vessel. I need not describe my Atlantic voyage since you yourselves must have made the journey."

"Indeed we did," said Dot. "I must thank you for your story, Colonel. Some of your adventures were quite stirring. But when I tell you of my trip down the Pacific Ocean and through the Panama—"

"Please! Not again, Dot!" protested Dimple.

At that moment a man swept up the five grains and tossed them into a bucket travelling toward the top of the mill. It is said that some weeks later an English boy in Manchester, who before going to bed had eaten over-



BLACKBOARD DRAWING BY MISS GOLDENRULE

heartily of bread and jam, was forced to listen in a dream lasting throughout the entire night to the tale of Dot's wanderings.

The class, which had listened with interest to Miss Goldenrule's story of the Colonel's adventures, decided that the travels of the other four grains were worthy of note. The pupils were divided into four groups. In their Geography Story Books the first group described the journey of Miss Dot by way of Vancouver and the Panama Canal. The second told how Miss Dimple had varied a similar trip by embarking from Prince Rupert. Downy, it appeared, had found use for the fuzz on his head while making the chilly voyage from Churchill through Hudson Strait, while Doughy's endurance had been tested to the utmost on a long train journey to Halifax.

Some of the pupils illustrated their stories with a drawing of the Combine Monster, others by sketching a vessel being loaded at an elevator.

Chapter XXIV

AIRWAYS

MANY a time your great-grandfather, while plodding his weary way on foot or on horseback to the nearest city, wished for the wings of an eagle to speed his toilsome journey. Even after railroads, steamships and automobiles had relieved travel of its toil, your father and mother used to envy migrating geese their swift, easy passage, or wandering hawks their lofty, sun-bathed playgrounds. Little did your grandparents dream that a coming generation would holiday in the clouds and fly to business by airway express.

Did you ever make a paper dart and send it sailing across the room? The pressure of the air against the upward-slanted wings of the speeding dart keeps it from falling. But when its speed slackens it tumbles to earth. The first kind of aeroplane was built after the fashion of a paper dart. It was called a glider. By means of one or several pair of wings men were able to leap from a height and glide through the air the distance of a city block. But the glider could neither be steered nor kept moving.

Two American brothers, Wilbur and Orville Wright, built and flew the first real aeroplane. For years they patiently studied the problems of aerial navigation, toiling day and night and performing many dangerous flight experiments while the world laughed at them for a pair of fools. At last they succeeded in fitting a glider with an automobile engine, a driving propeller shaped like an electric fan, and a pair of steering rudders. With this crude machine they made the first successful aeroplane flight. The air was conquered for travel even as the land and the sea. People who had scorned the brothers as fools now hailed them as heroes.

The body of an aeroplane is called the fuselage. It is

shaped like a cigar and is built of thin, metal sheets. Near the centre is a cockpit, in which the pilot sits. Instead of a cockpit a large passenger plane is fitted with a cabin in which a dozen or more people may ride. In front of the cockpit is a powerful gasoline engine which rotates a two-bladed propeller attached to the nose of the fuselage. A large passenger plane may be equipped with several propellers. The propeller blades are slanted opposite to those of an electric fan, pulling the air backward instead of pushing it forward. The pull of the rapidly-turning screw forces the machine ahead.

A monoplane has a single plane or wing like two long, wide arms stretching to the left and right of the cigar-shaped body. It is fastened to the fuselage above the heavy engine section by means of strong braces known as struts. In a biplane there are two planes, one above and the other usually below the fuselage. The plane is sometimes made of metal, sometimes of tough linen fabric. It has a slight cup toward the centre and is fixed at a gentle upward slant facing the line of flight. The backward rushing air from the propeller is pressed against the under surface of the plane and tends to lift the machine. The deeper the cup the more rapidly the plane can rise. The shallower the cup, the swifter is the machine's onward flight.

An automobile or a ship may be steered left and right. But one must be able to steer an aeroplane not only left and right but also up and down. This is accomplished by two pieces of steering apparatus attached to the far end of the fuselage. One, called the rudder, is fixed in an up-and-down position like the rudder of a ship or the tail of a fish. The forward half is stationary and helps to give the machine sidewise balance. The rear half is hinged to the forward half and can be operated from the cockpit or pilot house to turn the machine right or left. The second piece of steering apparatus is called the elevator. It is shaped much like the rudder but is fastened to the end of the fuselage in a horizontal instead of a vertical position. Its forward

part, being stationary, helps to steady the flight of the machine. The rear, which is movable, can be operated from the cockpit or pilot house to elevate or lower the aeroplane. The machine is also steered and balanced by means of a movable flap at the rear edge of the great gliding plane. This flap is called the aileron.

The take-off and landing apparatus is attached to the under side of the fuselage. If the machine is to travel from place to place on land, two automobile-like wheels are used. During the winter, when the ground is covered with snow, a pair of sleds may be substituted for these wheels. Near the rear of the fuselage of a land plane is a skid which saves the tail of the machine from bumping along the runway. Sea-planes, which take off from water, are fitted with a pair of boat-shaped buoys called pontoons.

Did you ever see a duck rise from a pond? The bird paddles furiously through the water against the wind. When sufficient speed has been attained, the pressure of the air against the cups of its outspread wings lifts the fowl aloft. A sea-plane takes off in much the same fashion. The engine is started. The whirring propeller blades bite into the air and urge the machine forward on its boat-shaped pontoons, until there is sufficient pressure against the cup of the plane to lift the huge artificial bird from the surface of the water. Once the sea-plane is in the air the elevator at the tail of the fuselage is lowered. This causes the nose of the machine to tilt upward in such a way that the backward rushing wind from the propeller striking against the slanted inner surface of the plane enables the pilot to climb.

A land plane takes off in much the same manner. It is faced down a long runway. The pilot climbs into the pit and opens the starting switch. A roar from the engine, and a blast of sand sweeps backward as the propeller comes to sudden life. Down the runway speeds the machine on its automobile-like wheels, the tail of the fuselage bobbing on its skid. Once, twice, thrice the wheels leave the

ground. A little jump and the machine is in the air. The elevator is depressed. The nose turns upward and the plane begins its skyward climb. In the winter, when the automobile-like wheels have given place to sleds, the runway is either a sledway or a sheet of smooth ice.

An aeroplane harbour is called an aerodrome. It consists of a large, level landing field illumined by floodlights in order that a pilot may take off or land during the night. About the landing field are garage buildings in which machines may be housed. An aeroplane garage is called a hangar. The position of an aerodrome is marked by searchlights in much the same way as the location of a harbour by lighthouses. When an aerodrome is a calling place upon an established airway it is known as an airport.

In such a huge country as Canada the aeroplane may perform many practical services. It is used by the postal department to forward mail. At Rimouski ocean liners stop to take on or to put off pilots whose business it is to guide vessels through the difficult passages of the St. Lawrence River. While a pilot is being taken aboard an incoming ship, the more important mail bags are transferred from the vessel to the little pilot boat, which carries them to a waiting sea-plane to be hurried to Montreal. In similar fashion an outgoing vessel may here receive mail bags made up in Montreal the day after the ship departed from that city. A regular air post service has been established across Canada by way of Halifax, Rimouski, Montreal, North Bay, Sault Ste. Marie, Port Arthur, Winnipeg, Regina, Calgary and Vancouver. Branch airways, called shuttle lines, connect this main line with such places as Saint John, Toronto, Hamilton and Windsor, Saskatoon and Edmonton. The two great Canadian railways are making arrangements to ship fast express by means of aeroplanes. Regular lines of passenger service are rapidly being established.

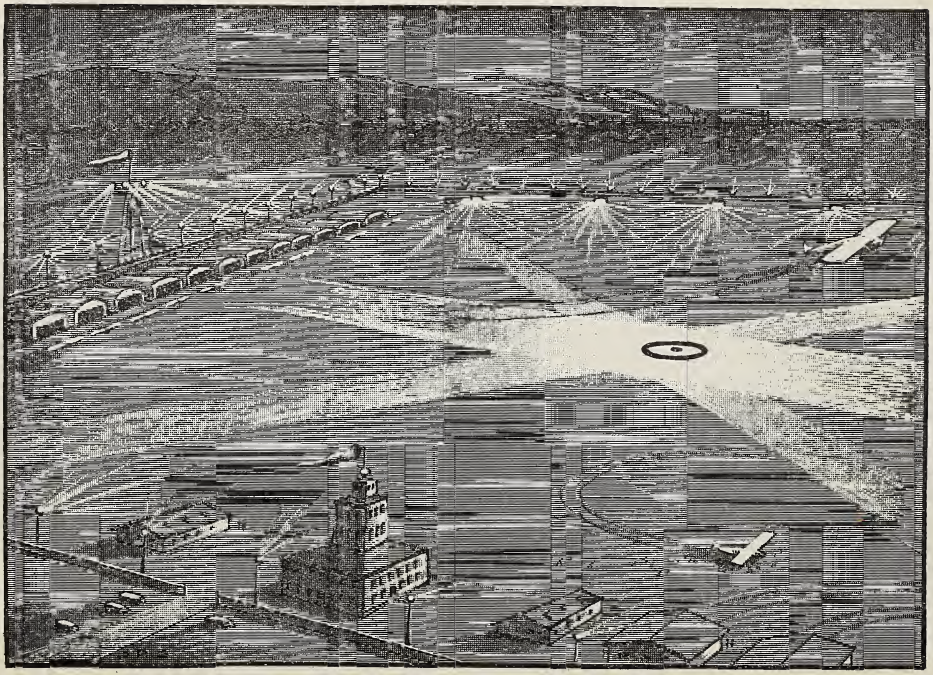
Aeroplane fleets are being used to connect the more settled parts of Canada with outlying regions which have

neither railway nor automobile service. Passengers and freight are carried from Sioux Lookout on the Canadian National Railway to the mining camps at Red Lake in one and one-half hours. It requires more than a week to make the same trip by canoe or dog-sled. Other mining camps as well as distant fur-trading posts receive similar service.

The great northland region about Hudson Bay and westward to Bear Lake is being prospected for minerals by means of aeroplanes. During the first year of an attempt certain sections of the country are explored by plane, provisions and supplies are brought in and depots are established in likely-looking places. The following year prospectors and collapsible canoes are carried in and the country surrounding each depot is prospected for gold, copper, radium and other minerals. Should ore be discovered, the third year will find planes hurrying north with drills, dynamite and other material used in developing a mine. The wonderful silver and radium mines about Bear Lake were discovered and developed by means of aeroplane transportation.

New territory is being explored and known districts surveyed by means of aeroplanes. Flying low over the country, the pilot or his assistant takes a succession of photographs of the land beneath. These photographs are matched and pasted together to make a continuous mosaic picture of the surface. In the process of fitting and pasting them together, the photographs, instead of being cut, are carefully torn, with the result that no lines of division are to be seen in the finished picture. The distance between two places on the ground may be discovered by simply measuring the corresponding distance on the picture and multiplying it by the number of yards per inch according to a scale determined by the height of the machine while the photograph was being taken. Heights and depths are shown by taking two photographs of the same spot at the same time from different parts of the aeroplane.

Since mosaic pictures show swamps, lakes, hills and



BLACKBOARD SKETCH BY MISS GOLDENRULE

forests as well as distances, heights and depths, they afford the location man an easy method of laying out the best route for new roads, railways, telephone and telegraph lines. Nowadays one engineer by the help of mosaic pictures can in a single week lay out a better route for a railway than could, in the olden days, a large location party after months of exploration and survey work.

The important part played by the aeroplane in forest protection has been told in the chapter entitled Forest Health in a companion book, *Canadian Neighbours*.

Roadways, railways, waterways and airways, by aiding travel and transportation, all tend to build our country into one great neighbourhood and unite our people into one great nation.

During the telling of the story Miss Goldenrule made use of a model aeroplane built for her by Ike Stobers, to explain the structure and working of a machine. At the conclusion of the lesson, much to the boy's delight, she asked if she might put the model with the School Geography Collection for future use in the classroom.

In their Geography Story Books the pupils wrote the story of A Canadian Aviator, using for an illustration the sketch of an aerodrome.

Chapter XXV

LOCAL TRADE

"SNUG little home you have here," remarked the thousand-dollar note to his next compartment neighbour in the bank till.

"Not bad!" replied the crumpled dollar bill thus addressed. "Provided one has leisure to enjoy it."

"You don't mean to suggest that a wee bit of bank paper like you has much moving about to do in a sleepy little town such as this?" scoffed the big bill, laughing until his crisp skin crackled.

The wrinkled features of the small bill stiffened with haughty dignity.

"An observant traveller, such as you no doubt profess to be, would have noticed from the inscription on my face that I am not bank paper at all. My cousin, the two-dollar bill, and myself represent the wealth of the whole Dominion of Canada. A King's image graces my front, while my cousin wears the medallion of the Prince of Wales. Bank paper, indeed!"

"No offence! No offence!" responded the big bill, regarding his neighbour with increased respect. "Just a friendly joke between travellers. I did not at first notice your crest, owing to the fact that I am a bit off-colour this morning, the after-effects of a big business deal yesterday. Last week a chap drew twenty of us from a New York bank and came here to buy cattle. Sent a train-load out last night, I believe. Twenty thousand dollars' worth of business must have created quite a stir in this small town."

"Possibly!" replied his companion, only partly mollified by the other's smooth apology. "And where, might I inquire, did your travels take you before that?"

"I spent the previous six months in the vault of the New York bank, resting from a rather strenuous deal in a

train-load of California oranges purchased for shipment to Toronto. Thirty-three or four of us were involved in that transaction."

"And before that?" asked the small bill.

"Some seven or eight months previously I was engaged in a big mining affair."

"Rest cure between times?" came the persistent voice.

"Look here!" snapped the big bill, sudden suspicion tingeing his voice. "You're making insinuations concerning a matter you know nothing about. You little chaps cannot comprehend the heart-breaking labour involved in big business transactions. One simply has to lie up six months or more after a large affair."

"As nearly as I can make out," commented the other, puckering for a moment his already over-furrowed brow, "As nearly as I can make out, you average about a thousand dollars' worth of business every six months. Shucks! I do that much myself in six weeks."

"You do?" exclaimed the big bill.

"Fact!" asserted the other eagerly, his face resuming its normal expression of wrinkled alertness. "For instance, here's what happened to me yesterday."

The big bill curled his heels over the far end of the compartment and stretched his body into a more comfortable position. His smooth features assumed a look of bland interest merging to boredom as the narrator proceeded.

"The night before last my day's work ended in the pocket of a teamster, Patrick O'Brien by name. A five-dollar bill and myself formed his wage from the Dennis Fuel Company. You can still see a dirty streak across my face where he thumbed me as he put us in his pocket.

"Patrick owns a span of iron-grey horses, a deep-boxed dump wagon and a general purpose wagon. He makes a living teaming by the day. His wife, Mary, and their two small kiddies, a baby boy and a girl, live in a small white house on a five-acre lot near the outskirts of the town.

"I was not quite correct when I stated that my day's work finished in Patrick's pocket. Immediately after supper he turned over to his wife the five-dollar bill and myself. Taking care of a house and two kiddies is worthwhile labour and entitles one to a fair wage. Payment of the same is, in my opinion, a real business transaction.

"That evening I had a wonderful time peering from the clock shelf at Patrick and Mary teaching Pat Junior to walk. I don't suppose you come much in contact with the social life of a community?"

"My dear fellow, the inner vault of a large bank is the most exclusive club in the world," replied the big bill with a slight touch of hauteur in his voice.

"Certainly! Certainly!" was the hasty answer. "I never was in one. There seems to be an air of gloomy grandeur about the place quite unattractive to a person of simple tastes. An attitude of mind due, no doubt, to my humble upbringing!" he added conciliatingly as he proceeded with his story.

"Early the following morning a farmer called at the door and Mary exchanged me for a pound of butter."

"What! a dollar for a pound of butter?" exclaimed the listener.

"Well, no, not exactly!" replied the small bill. "The butter came to thirty-two cents and the farmer, of course, gave Mary the change."

"I see," said the big bill reflectively. "Go on!"

"After calling at several other houses the farmer drove across town to supply customers on the far side. At least he started across, but stopped on the way to visit a boot and shoe store where I and two of my cousins were exchanged for a pair of heavy working shoes."

"Pray, how do you know the farmer was on his way to customers living on the far side of the town?" the big bill inquired with polite curiosity.

"How inquisitive you are about unimportant details!"

exclaimed the small bill. "I suppose I should have said the farmer was probably on his way to visit other customers. The fact is that during my life I have been with that same farmer at least fifty times and know his ways perfectly. Dave Brown is his name, and he owns a small dairy farm about eight miles out from town. He used to deliver milk here, but owing to the recent establishment of a city milk supply company he has gone in for pigs, chickens and butter. His wife and eldest girl—"

"What happened after your arrival in the shoe store?"

The small bill smothered an exclamation of indignation at this ungracious interruption, but being eager to relate his exploits, curbed his anger and endeavoured to adapt the narrative to his listener's wish.

"Not five minutes after my arrival, a man from the Perkin Shoe Factory entered to collect an account. Lately, money has been rather tight in our town. Perhaps that is the reason I am being hustled about so much. Anyway, myself, a number of other bills, two cheques and a note were fastened together with an elastic band and handed to the collector. No sooner had we been checked over in the office of the Perkin Shoe Company than most of us were despatched by messenger to the tannery on the hill.

"Here a pretty slip of a birl unbanded the package and distributed us among several compartments in a drawer of her desk. I had been bundled next a two-dollar bill who, having spent the morning with a market gardener, smelled so strongly of onions that, though he was my cousin and a nice fellow to talk with, our separation proved a great relief. I inhaled with joy the pungent odour of leather pervading the plant. The faint fragrance of violets which every now and again floated from the person of the young lady at the desk was a heaven-sent pleasure."

"A heavenly scent pleasure, you mean," suggested the big bill with a self-satisfied smile.

A flush of green swept the face of the small bill.

Muttering a confused apology concerning his inability to distinguish between adjectives and adverbs, he hastened to proceed with his narrative.

"I hoped to have remained some time in that office but had scarcely settled down to dream of spring woods and flowered banks when whose voice should I hear but that of Dave Brown.

"Dave had brought two calf-skins to town that morning but had found the tannery closed as he passed by. After delivering the butter he had returned to sell the hides. Being at the top of the dollar-bill compartment, I formed part of his payment. Somewhat downhearted at leaving the office so soon, I consoled myself with the reflection that I would be spending a pleasant evening at Dave's farm. Dave's wife is an invalid, and the way that eldest girl manages—but I forgot that you are not interested in local affairs.

"However, I was again to be disappointed. Scarcely were we on our way than Dave stopped at a service station to buy gas. As a rule he gets gasoline by the barrel, keeping it at the farm for use in both car and tractor. But this day he had run short and I was turned in for enough gas to take him home."

"How many gallons?" inquired the thousand-dollar bill.

"Two," replied the other.

"At how much per gallon?"

"Twenty-seven cents, I think. Why do you ask?"

"Merely from a general interest in the oil situation. Go on with your story."

The small bill glanced suspiciously at his neighbour. "You can see the smear of oil on the king's image where I rubbed against the man's greasy pocket flap," he asserted.

"Interest in your tale and not doubt as to its probability prompted my questions," said the larger bill with a benign smile. "Pray continue!"

Thus assured the small bill again took up the story.

"The service station man had been engaged in installing

a new pump when Dave drove up. He continued at this job for five or ten minutes after the farmer left, then went across the road to McGill's Hardware Store for bolts. It was my fortune to change hands in the transaction.

"Life began to move swiftly for me during the next half-hour. McGill has a custom of paying his hands Friday instead of Saturday noon. He has a Scotch notion that it helps Saturday trade. Shortly after twelve o'clock I found myself in the pocket of Fred Miller, a tinsmith in the employ of McGill. Fred hadn't gone more than a block when he dropped into the City Hall to pay his water rates, and he and I parted company.

"Chance had it that we entered the City Clerk's office at the same moment as Tony Safalo, who had stepped in to collect an account for a wreath which the town council had purchased for Memorial Day. We have a method of paying accounts directly the day after the council meets and passes them. Saves time and postage. No sooner had I been pushed across the counter in one direction than back I went the opposite way.

"Tony's hothouse is a nice place to visit during the winter when all is snowy and blowy outside but warm and comfortable and heavy with the perfume of flowers within. The late spring is a different story. I was glad when Mary Smith came in to buy a dozen and a half late cabbage plants and took me away as part of her change. On the road home she used me to buy two loaves of bread and a plain white cake at the bakers. From there I went with several other bills to Dan Petch's grocery for flour.

"Dan is a go-ahead chap if ever there was one. He is putting a new front with large show windows in his store. Though I wanted to stay at Dan's to see how the work was progressing, it was my luck to be sent to the planing-mill for an extra six hundred feet of matched lumber. There the buzz of the saws and the hum of the planer put me to sleep, I think. The next thing I remember was being picked up by the big honest hand of—whom do you suppose? None

other than Patrick O'Brien himself, who had been doing a day's teaming for the lumber company.

"I was astonished that evening to notice from the clock shelf that Pat Junior was able to take three more steps than he could the night before. Smart boy, Pat! And good honest Irish parents he has. Saving, too! It was Mary herself who brought me down town this morning and put me in the bank. You may have noticed her?"

The other shook his head.

"I suppose," concluded the small bill, "that in large affairs one has no chance to cultivate real friendships. Mine is a hard life and I am worn and wrinkled before my time, but I have scores of true friends. Two years ago I came to this town as fresh and green as a bill could be. I have never left it. All my experience has been gained here. The world outside is known to me only through conversations with passing strangers such as yourself. But there are few people, few homes and fewer places of business in this town whose acquaintanceship I have not made.

"I have told my story. Last Friday was a fair sample of a day's work—fifteen dollars' worth of trading, you may have noticed. If busyness is business, then taken all together my work is fully as extensive and perhaps even more important than yours."

"You do put forth a great deal of effort," the big bill admitted with a condescending smile. "Nevertheless I cannot accept your final statement. Since you yourself introduced the personal element into this conversation you will, no doubt, pardon me should I undertake to point out certain mathematical discrepancies in your story. Though you took part in fifteen transactions, it is scarcely a fact that you did fifteen dollars' worth of business. For instance, the butter amounted to but thirty-two cents; the gasoline to but fifty-four. Possibly the girl, Mary Smith, purchased less than a dollar's worth of cabbage plants—if indeed your part in that affair could be

classed as a business transaction at all. There are other examples."

A network of worry wrinkles seamed the face of the small bill. "I must confess," he said in humble tones, "the higher mathematics do confuse me. My education in that respect has been neglected. I've helped change many five and even many ten-dollar bills, but only three times in my life have I had to do with twenties. As a result, figures above ten have but little significance.

"However, in my business, at least every one gets a dollar's worth for his dollar," he added aggressively.

"Meaning what?" inquired the thousand-dollar bill, elevating ever so little the wavy lines along his margin.

"Meaning that in your big twenty-thousand-dollar cattle deal, how much went to pay freight, how much to pay customs duties, how much to pay dealers who bought from the farmer and dealers who sold to the butcher? How much was taken from the seller's price and how much added to the buyer's price? When I do business the seller gets a full dollar for his goods and the buyer full goods for his dollar. No deductions!"

"Small town talk!" commented the large note scornfully. "But then, how could one of your limited experience appreciate the significance of international trade? How would your housewife get her sugar, tea and oranges; how would our manufacturers obtain their cotton, rubber and silk; how would your farmer friends dispose of their surplus cattle and wheat, were it not for international trade? How could you profitably work a coal mine or manufacture agricultural implements or grow western wheat on a basis of local trade?"

The small bill seemed overwhelmed by this torrent of examples concerning many of which he had but scanty knowledge.

"Perhaps! Perhaps!" he muttered. "Though if we ate more Canadian apples and fewer California oranges we should all be just as healthy and twice as rich. Inter-

national commerce may have its use, but I contend a country's most valuable business lies in its local trade because the more direct the transaction the more goods the one gets for his money and the more money the other gets for his goods. Dollars that stay at home work at home, but dollars which go wandering about the world have a habit of never returning."

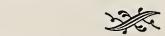
"I suppose it would be useless to draw your attention to the fact that production on a large scale and under favourable conditions lowers costs far beyond transportation and other trade charges. Perhaps, however, I may be permitted to bring to your notice another mathematical discrepancy. You stated that in six weeks you did a thousand-dollar business. Allowing your sample day's transactions to total fifteen dollars—a fact which you have failed to establish—how do you calculate the trade equivalent of thirty-six days to be one thousand dollars? I make it five hundred and forty."

"And how, may I ask, do you estimate but thirty-six days in six weeks?" countered the small bill.

"You don't work on the Sabbath, surely?" replied the other.

"Indeed, I frequently do," said the dollar bill. "Only last Sunday I was put on the collection plate. After the service the minister slipped me into the hand of a poor mother whose house he visited on his way home—one of the best day's work I ever did. I suppose such an experience never happened to you?"

"I did find myself once on a collection plate," musingly answered the thousand-dollar bill. "Though, as I discovered later—by mistake."



After Miss Goldenrule had told the story of the dollar bill the boys and girls of the class began to question and discuss the advantages and disadvantages of local trade. Arguments developed so rapidly and indeed so heatedly that the teacher suggested the following composition lesson be devoted to a

debate on "The Relative Advantages of Local vs. International Trade."

The oral composition list was scanned for six speakers—who had not yet debated and who seemed especially interested in the topic. Each speaker was given five minutes in which to deliver his arguments, and the leaders were given one additional minute each in which to make reply. Three critics were likewise chosen whose business it was to sum up the arguments established on either side as well as to note the form and style of delivery in the case of each speaker. After the critics had delivered their commendations, criticisms and judgment, Miss Goldenrule was asked to say a few words. After congratulating the speakers on the excellencies of their several presentations, she called the pupils' attention to the following facts: the winning of an argument is not necessarily the finding of a solution to a problem; many problems concerning the relations of men one to another remain as yet unsolved; the business of a school is not to solve such problems, but rather to create interest concerning them, so that happily, at a later date, better methods of dealing with certain situations may be discovered.

In her Geography Story Book Mary wrote a story entitled, "Dollar Day," which dealt with local trade more from a woman's point of view. Bob, who had been one of the speakers, entered in his book a summary of the debate.

Chapter XXVI

CANADIAN TRADE

"DURING the debate on 'Local vs. International Trade,' one of the critics drew our attention to an old saying that the middle course is usually the most satisfactory way," began Miss Goldenrule at the opening of the next geography lesson. "He stated that in this case the middle course would seem to be an all-Canadian trade. The business done among our own people possesses the advantages of local trade in so far as keeping dollars at home, avoiding custom duties and lowering the cost of transportation is concerned. It likewise possesses the advantages attributed to international trade in so far as it permits of mass production amid favourable surroundings.

"Our Canadian neighbourhood should have one of the finest home markets for home products in the world. Nowhere are there better roadways, waterways, railways and airways for transporting goods. Nature has blessed us with abundant resources of nearly every kind. Our people are intelligent and industrious. By co-operating one with another in the building up of home industries and home markets we can make Canada one of the most prosperous nations on earth.

"Suppose we investigate to what extent this all-Canadian trade has been developed. To do this we may run way-freights along our two great transcontinental railways from the west coast to the east coast. The two routes will be indicated on the blackboard. On the north side of the track at each important depot loading platforms will be constructed. On these we shall place freight that is to be shipped eastward. At each of the stations, according to the needs of people in that section of the country, the way-freight will drop one or more cars of

produce from the west. A freight bill stating the content of these cars will have to be made out in each case and given to the station agent in charge, who will file the bill by fastening it with plasticine to the blackboard on the south side of the track."

On the blackboard Miss Goldenrule drew a long red line to indicate the route of the Canadian Pacific Railway from Vancouver to Saint John and a long green line to mark the course of the Canadian National Railway from Prince Rupert to Halifax. A number of pupils were called upon to print in their proper places along these routes stations named by the teacher. Each pupil printed one name. Since the map ran the full length of the blackboard, several boys and girls were able to work at the same time and thus the task was soon accomplished.

After some discussion the class concluded that a freight train leaving Vancouver might carry cars loaded with shingles, lumber, salmon and gasoline. It was noted that certain foreign produce might likewise be shipped eastward from that port. But since the lesson was to deal with all-Canadian trade it was considered that such shipments should be omitted. Only one loading platform was constructed to accommodate both Vancouver and New Westminster. On it were drawn two bundles of shingles, a pile of lumber, and a box containing cans of salmon. On a switch line beside the loading platform was drawn a tank car of gasoline.

At Okanagan a box of British Columbia apples was placed on the platform for shipment. A freight bill calling for one car of gasoline was made out and given to the station agent at Okanagan, who placed it on file by fastening it with plasticine to the blackboard beneath the name of the station.

Cars of shingles, lumber, salmon and apples were dropped at Calgary, the required bills for which were made out by the train men and filed by the agent. A quarter of beef and a box of oatmeal were placed on the

loading platform at this station. A tank car of gasoline from the refinery was shunted on the switch and a number of cattle were placed in stockyards for shipment.

At Medicine Hat, Moose Jaw, Brandon and Winnipeg barrels of flour were made ready for loading. Each barrel was marked with a large "F." From the third western refinery, located at Regina, was switched a tank car of gasoline. A pile of brick and another of tile awaited the coming of the way-freight at Medicine Hat. From Calgary east to Winnipeg several elevators were constructed to accommodate the wheat trade of that district.

A Canadian National way-freight was loaded with halibut at Prince Rupert. At Jasper two tourists awaited an incoming train. They were evidently man and wife. Through a long telescope the lady gazed in admiration at the snowy summit of Mount Edith Cavell, while her less poetic-minded husband angled for a last trout. Coal was piled ready for shipment at Edmonton, as it had been at Crow's Nest and Lethbridge. The fur, fish and lumber trade of the more northern portions of the Prairie Provinces were not overlooked.

Elevators were constructed at Fort William and Port Arthur to receive western wheat about to be shipped through the Great Lakes. At these same points bales of paper pulp were stacked upon the loading platform. On each bale was printed the letter "P," while upon the blocks of nickel matte and ingots of refined copper at Sudbury the letters "N" and "C" were drawn.

Considerable discussion arose concerning the market for British Columbia apples and lumber, Alberta coal and brick, Regina gasoline and Winnipeg meat. In each case Miss Goldenrule permitted the pupil who presented the best argument to decide how many cars of produce were to be shipped east of Winnipeg and at what points these cars were to be dropped. The way-freight was also delayed while the class discussed the manufactured articles to be sent from Ontario and Quebec to the Maritimes. The

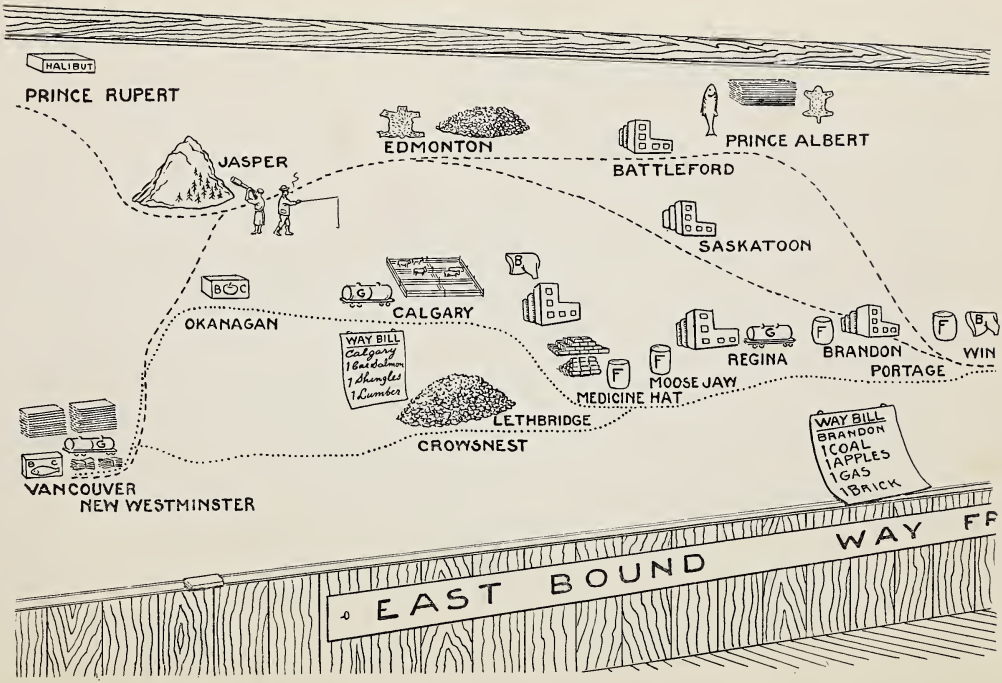
teacher reminded the class that a freight engine can haul only a limited number of cars. She also suggested that trains should arrive at their destinations as per schedule laid down in the timetable, which in this case was the duration of the geography period.

Thus urged, the pupils loaded the trains with automobiles at Windsor and Oshawa; reapers at Toronto and Hamilton; plows at Brantford; fishermen's rubber boots at Kitchener and Montreal; breakfast foods at London and Niagara; shoes at Montreal and Quebec; fishermen's scales at Sherbrooke and matches at Ottawa. At that, the trains were nearly twelve minutes late arriving at Saint John and Halifax.

Miss Goldenrule said that the following geography period they would run way-freights from the east to the west coast. To enable these trains to operate on schedule time, various members of the class were given blank freight bills to make out the evening before the lesson. Each bill was to have the name of the railroad, the name of the station and the date of delivery printed on it. The cars of produce to be dropped at each particular depot were to be determined by class discussion the following day and entered upon the bill accordingly.

The remaining members of the class were divided into nine groups. Each group was to bring cut-out pictures of the products of a given province. By using these cut-out pictures instead of drawings to represent freight upon the various loading platforms, the teacher hoped to save more time. And indeed she did. The east-to-west trains carried heavy loads and did considerable shunting during their runs, but managed to arrive at Prince Rupert and Vancouver two minutes ahead of time.

In their Geography Story Books the pupils made out the following freight schedule of trade in the all-Canadian market. In the first blank space of the first row there was printed in red beneath its corresponding general heading the name of the Pacific



CO-OPERATIVE BLACKBOARD PROJECT BY CLASS

Province, in the second blank space of the second row the names of the Prairie Provinces, and so on. Within the blank spaces to the right and left of each province or group of provinces the pupils wrote the products shipped by that section of the country to the markets of the three other sections as indicated by the general heading of the schedule.

Pacific Province	Prairie Provinces	Central Provinces	Maritime Provinces
BRITISH COLUMBIA			
wheat *flour* *oatmeal* *butter*	*ALBERTA* *SASKATCHEWAN* *MANITOBA*	*coal* *wheat* *flour* *oatmeal* *cattle* *wool*	*wheat* *flour* *oatmeal*
		ONTARIO *QUEBEC*	
			NEW BRUNSWICK *NOVA SCOTIA* *PRINCE EDWARD ISLAND*

Chapter XXVII

EMPIRE TRADE

CANADA DAY at the Empire Exhibition was drawing to a close. Throngs of visitors who had crowded the immense Empire Trade Building, to hear the speeches of the afternoon, slowly dispersed, some to remain for the fireworks, but the majority to return to their homes or hotels—sheepmen from Australia in broad-brimmed hats—a turbaned Hindu prince and his retinue—native sons from the Land of the Maple Leaf, with voices hoarse from cheering and the singing of "O Canada"—a West African king, the doubtful dignity of whose wilted collar was recompensed by the majesty of a tall silk hat—black-eyed Chinese merchants from Hong Kong, the rustle of their garments clothing the murmur of their voices—Englishmen, Scotchmen, Irishmen, Welshmen—soldiers, sailors, wives and children.

The King himself had graciously been present to open the afternoon programme. In brief, simple words he spoke of the leading place occupied by British peoples in the advancement of civilization and the spread of peace and good will over all the earth, deploring the evil results of mistaken policies but extolling the spirit of honour, fair play and self-sacrifice which always had been exhibited during times of stress. He especially emphasized the need for men of high ideals holding and working together, not alone for the welfare of themselves and their peoples, but for the good of all nations.

The Prime Minister of Great Britain, who had flown from a cabinet meeting to fulfil his engagement, adopted a more militant attitude. He spoke of the brotherhood of blood which had caused the various Dominions to answer the call of battle as one man—of the determination to fight shoulder to shoulder and die side by side, that had won

not only the security of the Empire but the safety of the world. He pleaded that this spirit of fellowship be maintained during the exigencies of peace as during the trials of war—that the honour of the dead be not pledged in a pawnbroker's shop—that the armada, which had outridden the storm, be not allowed to drift apart with the ebb tide.

The speech of the High Commissioner for Canada was on a less exalted but more practical plane. He said that the Great War, referred to by the Premier, had not been won by sentiment expressed in words but by sentiment expressed in arms and deeds—that the British Empire was a self-contained unit of commerce within whose bounds was to be found in abundance every natural and manufactured product used by man—that to buy apples on the market while fruit rotted in the orchard was a short-sighted, shiftless policy which must inevitably lead to disaster—that a wide extension of trade among the various partners in the British Empire was not only sound politics but likewise good business. He concluded with the statement that Canada was willing and ready to enter into negotiations with all or any part of the Empire for the purpose of facilitating trade relations and building up an all-British market.

With the approach of midnight the last of the gradually thinning crowd left the exhibition grounds. On the stroke of twelve the floodlights in the great Empire Trade Building were extinguished and only night lights left burning for the convenience of the watchman on his hourly rounds.

Next morning the watchman, an ex-army officer, who had seen service in more than one empire war and who had been deeply stirred by the oratory of the afternoon, told the following strange story:

It must have been well along to three o'clock. I had completed my second round and paused near the entrance for a short pipe, when I heard some one speaking. The soft, drawling voice seemed to come from out the Australian

section. I went over to investigate. "Some tired chap, who sat down to rest in a quiet place last night and dropped to sleep," ran my thought.

However, search as I would, there was no one to be found. As I hunted about, it suddenly came to my mind that, though the voice undoubtedly had its origin in the Australian section, it appeared to come from no one particular place. Rather it seemed to pervade the whole area and indeed the whole building, like sound in a talking cinema. So intent had I been on my search for the speaker that up until that moment I had taken no account of the words. Now, I paused to listen. The voice ceased. Another from the New Zealand section across the way took up the talk.

"That's a jolly good idea, old chap. We've been sitting about for weeks like petrified mummies. Let's have a time! Yesterday was Canada Day. Why can't we have a Canada Night? Trot out that jolly old commissioner, Canada—sporting dog, but with an eye to business, what?—and we'll take turns at bargaining a bit with him."

"Done!" came a voice from the other side of the building, not unlike that of the High Commissioner, but more youthfully vibrant. "Whom shall I take on first?"

"New Zealand!" shouted a chorus of voices.

"And jolly glad I shall be to creak my legs a bit," replied the voice from New Zealand. "Come on, you exports to Canada!"

Thereupon a most astounding sight met my eyes. More than half the exhibits from this section jumped from their places and went running, hopping, skipping, tumbling, rolling, bouncing, wiggling, crawling and fluttering across the pavilion floor. I followed the strange procession, in bewildered amazement.

"Good morning, gentlemen!" came the rejuvenated voice of the Canadian High Commissioner. "Of what service may I be at this early hour?"

After considerable consultation and a great nodding

of heads among the visitors, an enormous tub of butter wobbled to the front and began to speak in soft, mellow tones:

"Mr Commissioner, as the chief article of export from New Zealand to Canada, I have been selected to represent our group. Mr. Sausage Casings, who is the next chief article of export to your country, would more fittingly have filled this position because of his well-known ability to comprehend the meat of an argument. Unfortunately at the moment he feels limp and done out. Mr. Wool, Mr. Hides and Mr. Frozen Beef you already know. With Mr. Kaurie Gum and Mr. Hemp Fibre you are perhaps less well acquainted.

"Mr. Kaurie Gum was connected with the old Kaurie Pine Family, his father, Pitch Lump, having served as a retainer to one of the ancient Pines. When fell that noble tree in battle with the West Winds to be devoured by the swamps of our North Island, Pitch Lump survived, with many of his kind. Nowadays we New Zealanders mine the black soil of that ancient pine cemetery, wash away the muck, collect the yellow lumps found therein and ship them to you to be used in the manufacture of varnish. Mr. Hemp Fibre is a new-comer among us, much admired for the fineness of his nature and the strength of his character. We commend him as a chap whose acquaintance your twine and coarse weave manufacturers should make.

"Now, Mr. High Commissioner, your country and mine are alike in many respects. We are both to a large extent agricultural communities. Your land being many times larger than ours, you are in a better position than we to engage in the mass production of manufactured articles. New Zealand, on the other hand, having the milder climate, can handle live-stock more cheaply than Canada, especially during the winter months, when your cattle must be sheltered in barns while ours continue on pasture. Being on opposite sides of the equator, we have summer and autumn while you are having winter and spring.

"During the last few years Canadians have been importing from us somewhat more than a pound of butter per head per annum, and that during the winter months when butter production in Canada is most expensive and at its lowest ebb. Each year Canadians buy from New Zealand enough frozen beef to provide one steak for every inhabitant. Surely not a large amount, especially when you consider that our imports from your country of automobiles, rubber goods, canned fish, paper, lumber, flour, silk stockings, agricultural and electrical machinery, building steel, wire and razors have more than equalled our exports to you. Our purchase of these manufactured articles keeps a great many skilled workmen employed in Canada and so provides a large home market for your farmers.

"I say nothing of our shipments to you of wool, hides and sausage casings, since your production along these lines does not equal your requirements. Or the most I would suggest is that larger quantities of such necessary imports be obtained from one of your best customers. To sail full ships on the out voyage and empty ships on the return voyage doubles transportation charges and handicaps your merchants in our markets. Nor can you in all reason expect to sell where you do not buy."

The Commissioner's voice replied, "You have buttered the arguments well on both sides, Mr. Speaker. It would no doubt be profitable to increase our trade along the lines suggested, always provided our farmers are protected from undue competition. May I draw your attention to one small matter. Canada imports more wool from New Zealand than would appear. We buy from Great Britain combed wool, yarn and cloth, the material used in the manufacture of which came originally from your country."

The tub of butter wobbled his body in a nodding fashion.

"It would not be cricket to ask you to switch from the mother country," he gravely replied as he turned to lead his followers back.

The building suddenly rocked with laughter. A single bag of raw sugar was turning handsprings down the aisle in the direction of the Canadian section. Upon its arrival the bag solemnly saluted and then started to return in the same manner as it had come.

"Just a minute!" cried the voice of the Commissioner. "Are you aware that we buy more raw sugar from the Fiji Islands than from any other Dominion save British Guiana, and that you buy scarcely anything from Canada?"

"That is very sweet of you," replied the bag, and without other word continued its backward handsprings.

The procession of exhibits from Australia next trooped across the building. A brown-skinned raisin, whose wrinkled features beamed with an inherent good nature, the product of many sunny experiences, acted as spokesman.

"You may all see how readily a sample of New Zealand butter spreads," he began. "I suppose the chief export to Canada from each of the remaining British Dominions is fated to be chosen as group representative.

"We Australians have much the same trade relations with Canada as the New Zealanders, except in one respect. The northern half of our continent lies within the tropics. The presence of Mr. Currants, Mr. Raw Sugar, Mr. Canned Fruits, Mr. Wines and myself among the group of exports to your country is significant of a possibility of increased business between us. These tropical and semi-tropical articles enter into little or no competition with the home products of Canada.

"From the temperate portion of our continent we ship you wool and hides required by your manufacturing industries. From these same parts comes a small winter supply of frozen mutton—one chop per annum for each Canadian—and an equally small supply of winter butter—one table setting per year for each inhabitant. We likewise send to Canada the manufactured parts of a combined harvester and thresher which you assemble into machines for use on your prairie wheat farms.

"Our imports from Canada are similar to those of New Zealand, except that we manufacture our own flour and much of our structural steel, wire, tubes and rods. We buy from you fewer silk stockings but more gloves and coal. Without repeating the forceful arguments of Mr. Butter, may I ask that you consider the possibility of an increased exchange of goods, especially along the lines of non-competitive and seasonal products?"

I did not hear the reply of the High Commissioner as my attention was distracted by a jabbered conversation carried on in another part of the building. From a slight acquaintance with the language (gained while serving in the East), I gathered that the exhibits from India were discussing among themselves as to who should lead the procession and in what tongue the talk should be conducted. Finally it was agreed that the chief exports from these Dominions to Canada and from Canada to these Dominions should meet in friendly informal fashion in the auditorium.

A capital letter "T" jumped to the floor from the face of a box hailing from India and linked arms with a small letter "t" from Ceylon to head the Asiatic group. These were followed by Princess India Rug, gowned in a beautifully-patterned costume. The princess, taking advantage of her freedom from court restrictions, was carrying on a mild flirtation with a roughly-clad Mr. Jute from her native state, much to the delight of three dainty spice maids, Miss Cinnamon, Miss Nutmeg and Miss Pepper. The brown-robed Miss Cinnamon of Ceylon was laughing merrily at some remark which the little brunette, Miss Pepper of Singapore, had made to her hard-headed friend from home. A sack of rice from India, a sack of shredded cocoanut and another of cocoa beans from Ceylon jogged slowly along with a bag of sago from the Straits Settlement. From the last-named section a stately tin soldier, mounted on a can of pineapple, brought up the rear.

The Canadian visitors were fewer in number. Mr.

Automobile and his friend, Mr. Rubber Tire, mingled affably with representatives from all the Asiatic Dominions. But the three military gentlemen, Colonel Silver, Major Aluminum and Captain Zinc, each shod in shiny rubber boots, confined their attentions almost wholly to the Indian group, attracted no doubt by the lovely Princess Rug.

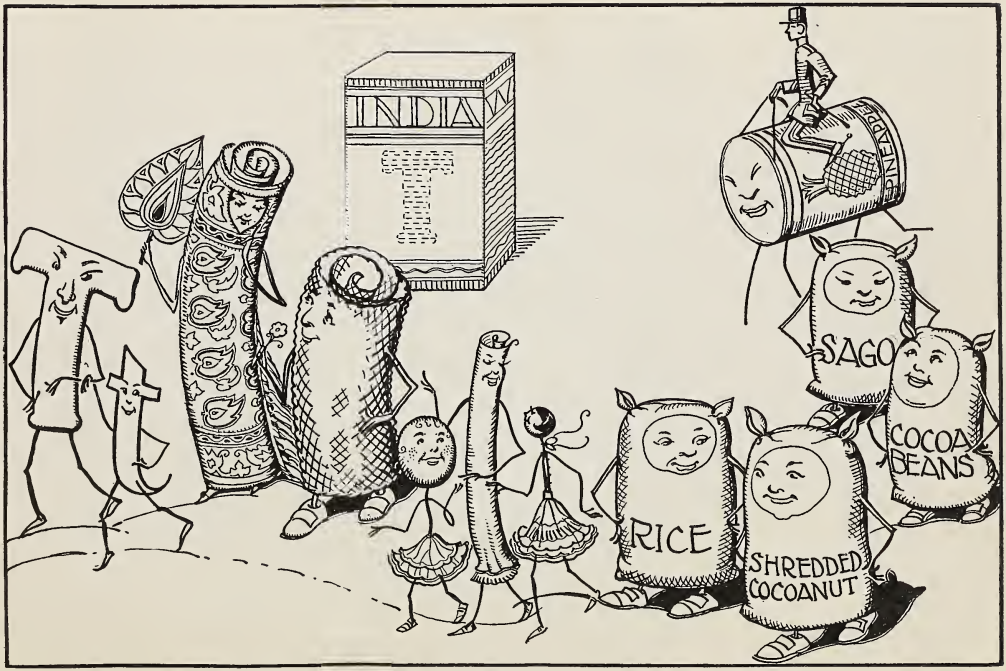
(*To be continued*)

Miss Goldenrule intimated that the tale told by the night watchman would be continued during the following geography lesson.

In their Geography Story Books the pupils wrote a brief essay entitled "All-British Trade." The lists of exports and imports, which the teacher had noted on the blackboard as she told her story, were used by the boys and girls as a basis for various home projects. Mary, who had literary ability, described the conversation carried on between the Asiatic and Canadian groups during their visit in the auditorium. Christopher, a new boy, drew a sketch illustrating the approach of the same two groups, while Bill, Bob's chum, who was likewise apt with the pencil, used as his subject the procession from the New Zealand section. Bob, being of a more practical turn of mind, borrowed from his father's office several recent reports on the Trade of Canada. From these he compiled a report showing to what extent business relations between Canada and her sister Dominions in Asia and the Southern Pacific Ocean had developed during the past five years.

"Shall we have to learn by heart all those exports and imports, Miss Goldenrule?" inquired Christopher.

"Not unless you intend to be Chief Statistician to His Majesty," smiled the teacher. "Many of the more interesting facts you will probably bear in mind as a result of having used them in working out your home project. The important thing is to gain an idea from the facts themselves of the possibilities and advantages of an All-British Trade."



CHRISTOPHER'S DRAWING OF THE PRODUCTS FROM BRITISH INDIA

Chapter XXVIII

EMPIRE TRADE—*Continued*

THE exhibits from British East, West and South Africa declared themselves much too weary after the day's performance to go tripping about the building at night. They readily agreed, however, to call up their friends, the Canadian exports to Africa, by telephone. Since each section had been equipped with instruments, this arrangement was easily carried out.

Miss Raw Sugar Sack, a lady of brunette complexion and waistless lines, from British East Africa, opened the conversation:

"Hello! Is dat you, Canada? I wants to speak to mah friends, Mistah Automobile and de soft fellah, Mistah Rubbah Tiah, dat goes round wid him— You dere, Mistah Automobile? I wants dat you and Rubbah Tiah meet some friends of mine, Miss Coffee and Miss Sisal Hemp, who just come recent to dis country. Powahful nice girls, once you get bettah 'quainted wid dem!"

She proceeded at some length to dilate upon the many excellencies of her friends. Miss Coffee apparently bore a striking resemblance in colour, size, appearance and general culture to the well-known Cherry girls of Canada. Reared in a beautiful tree home on The Plantations, amid the healthy highlands of East Africa, at maturity she with many of her companions had been chosen by selective examination to pursue a rigorous course of education preparatory to foreign travel. The selective examination consisted in dropping all the candidates into a stream of water running through a long tank. The lighter-headed entrants floated and were carried away by the flow. The sound candidates were gathered from the bottom of the tank and sent to school.

The system of education in vogue among coffee berries

is the exact opposite to that practised by human beings. We try to put as much as possible into our pupils, they try to take as much as possible away. In the primary course the red, fruity covering of the berries is removed by scrubbing and washing. The pairs of coffee beans which remain are then given a course of physical training in briskly-ventilated rooms until the skin which surrounds each pair becomes dry and brittle. They are now ready to enter the secondary school. Here the brittle skins are cracked by sets of rollers and blown away by fan-made draughts. The liberated coffee beans are then dried and packed for their trip abroad. It is presumed that they will be sufficiently roasted and ground by foreign travel to develop those delightful table attractions for which the coffees are so widely admired.

Miss Sisal Hemp was apparently of a more athletic though less artistic type. A member of the hardy Cactus family, she had been reared from one of many "suckers" set out at five-foot intervals in rows nine feet apart on a large plantation in the dry district of British East Africa. Ever since her fifth year she has been sending annually several of her four-foot leaves to enter tug-of-war contests throughout the world. The leaves are prepared for these contests by being beaten and washed to free their fibres from skin and pulp. The fibres are then combed into fine threads to be manufactured by cordage factories into binder twines and other tug-of-war contestants.

In the midst of this long description Miss Raw Sugar Sack was interrupted by a question from her listener, to which she replied:

"Suah, you bring your broder, Automobile Parts," she replied. "Den we all six goes riding. Hold dat line just one minute! Noder party wants speak wid you."

A rough-looking Negro by the name of Manganese Ore came thumping over to the telephone from the British West Africa section.

"Hello, Mistah Automobile, Mistah Rubbah Tiah!

Membah I meets you at de mine in British West Africa when you come see us from Canada? I wants dat you tell mah cousin, I'on Oah, dat I suah go ovah dere soon to help him make steel."

A sack of cocoa beans, likewise from British West Africa, called up Mr. Flour and Mr. Fish of Canada, whom she had several times met on her home plantation. Her conversation was one long complaint. First she told how a violent wind storm had stripped her cucumber-shaped pods from the trees before the fruit had fully ripened. As a result the process of opening the rind and taking out the pulp and seeds had been even more painful than usual. When the fruity mass had been heaped to ferment, the half-green pulp had behaved so outrageously that a bitter taste yet remained in her mouth. She doubted whether all the roasting, grinding and sugaring which one naturally hopes to experience while abroad would ever make her chocolate sweet or her cocoa palatable.

Mr. Corn, from British South Africa, then asked his Canadian relatives, Mr. Wheat and Mrs. Flour, whether they intended visiting South Africa that autumn as usual. He gave place to Miss Diamond, a sparkling young lady from his home state, who proceeded to call up her aristocratic acquaintances, Mr. Automobile, Mr. Rubber Tire and a very modern young gentleman by the name of Mr. Electric Apparatus. Mrs. Raw Sugar Sack, the mother of the big brunette from British East Africa, in calling up her old Canadian friend, Mr. Agricultural Implements, was given the wrong number and got Mr. Fish instead. However, as she had met Mr. Fish during one of his many trips to British South Africa, her natural embarrassment at the error was turned into a real pleasure. After securing Mr. Farm Implements and discussing with him certain problems in connection with the cultivation of the sugar plantation, she inquired after her stepdaughter, Miss Candy, and was delighted to learn that the young lady in question had already taken passage for another visit to her native

land. Mr. Canned Pineapple then held brief business consultations with a Mr. Paper, who had frequently been of service as an exterior decorator, and a Mr. Rubber Boots, who occasionally worked on his plantation. Miss Wool, considered by many to be rather "soft," was the last member of the British South African exhibit to use the telephone. Presumably unable to recognize any save her own name, after considerable hesitation she turned to the "W's" in the Canadian directory. Chancing upon the word "Wood," which an illiterate person might easily mistake in an unfamiliar book for the word "Wool," she called up the number opposite that name. Mr. Wood, a highly-polished gentleman who had many times visited Africa, was no doubt most courteous in his reply.

The exhibits in the West Indies section included those from Trinidad, British Guiana, British Honduras and the Bermudas, as well as those from Jamaica, the Barbadoes, Bahamas and other smaller islands of the West Indies proper. These decided (provided the proposal was agreeable to their Canadian friends) to repeat the visiting arrangements so successfully carried out by the Asiatic Indies.

Fascinated, I watched a bunch of bananas from Jamaica crawl along the floor, its hundred yellow legs moving in rhythmic pulses like those of a gigantic centipede. A cocoanut boy and an orange lassie from Jamaica romped down the aisle with a cocoanut boy and a grape-fruit girlie from Trinidad. Like naughty children the two couples persisted in dodging back and forth in front of a huge hogshead of molasses from the Barbadoes, much to the annoyance of its driver, a mulatto bag of raw sugar from the same locality. Bags of raw sugar from each of the other Dominions, except the Bermuda Islands, trudged in company with a sack of Jamaica coffee and two sacks of cocoa beans. Though the latter hailed from the homes of the two cocoanut boys and bore strikingly similar names, I surmised from their attitude as well as from their appear-

ance that the cocoa beans were in no way related to the cocoanuts. Sergeant-Major Jamaica Ginger, somewhat warped and twisted from his long service in the undergrounds, strove to keep the procession in order. His fiery temper was severely tried by a soft-headed Bahama sponge, who seemed for ever settling down to sleep amid the marching feet, and by a group of winter vegetables from the Bermudas, whose behaviour was altogether too fresh for the gingery old soldier.

Corpulent Mr. Flour Barrel led the procession from the Canadian section to the auditorium. He was closely followed by the three Fish brothers, Salted, Pickled and Canned, in company with the three Dairy maids, Miss Butter, Miss Cheese and Miss Condensed Milk. The whole seven seemed to be on friendly terms with all the West Indies exhibits. Mr. Automobile and his friend, Mr. Rubber Tire, likewise had a wide acquaintanceship among the visitors, though neither, to my notice, spoke with the representatives from Bermuda. Perhaps this was due to the fact that the group of youthful vegetables from that Dominion had quite monopolized the attentions of a football player by the name of Beef and his Scotch friend, a Mr. Oats.

While the meeting between the Canadian and West Indian exhibits was in progress, a tough-looking lump of a fellow by the name of Iron Ore strolled over from the Newfoundland section. With him came his countryman, Mr. Fish, and the latter's son-in-law, Mr. Oil. On his arrival at the Canadian section Iron Ore proceeded to address the exhibits who were not in attendance at the auditorium in a vague and somewhat general fashion.

"We Newfoundlanders be quiet chaps, we be, not much given to fusses. Thought to steer across and have a word with Canada. But half you chaps be out West Indies way —and all good friends of usens. Howsomever, there be my old pal, Coal. We two've seen hot times together. And there be my wife's folk, Potatoes, Sugar and Apples.

She'll be that vexed I missed her old chum, Mrs. Flour, and the three Dairy maids. I sets great store by my wife's people, that I do.

"And Cod Fish here will be knowing right well Mr. Wool Reefer, Mr. Rubber Boots and Mr. Gasoline Drum. Mrs. Cow over there and her bosom friend, Miss Grassie Hay, be always welcome visitors to the island.

"We be all mighty glad to see you folk. Come over soon. Cod tongue for breakfast. We be pushing back along now."

Possibly the departure of Iron Ore and his countrymen was hastened by a storm of protest which began to sweep the building. Scattered and subdued murmurs of indignation had rapidly increased in volume until the final words of the Newfoundlander were scarcely audible. A forbidding frown clouded his hard, grim features as he and his companions turned to make their way home.

I was dumbfounded that any one, and more especially a company of cultured, experienced travellers, should take exception to the simple, straightforward words of these hardy islanders. So great was the confusion of sound that for a time I could make no meaning of the clamour. Then I slowly learned that the shouts of remonstrance had no personal significance. They merely voiced the discontent of a host of exhibits, who, having little or no trade relations with Canada, were being automatically debarred, not only from the diversions of the evening, but likewise from the pleasure of exercising long-cramped limbs. After heated discussion, it was arranged that the performance should conclude with a grand march about the auditorium, led by representatives of the trade between Great Britain and Canada, but participated in by all the Empire exhibits.

I shall not attempt to describe the grand march in detail. Suffice to say that the music was furnished by a number of radios of Canadian manufacture scattered throughout the procession. Since each instrument was tuned in on a different broadcasting station, the accompani-

ment seemed at first hearing harsh and discordant. A more prolonged experience, however, made one conscious, not only of a throbbing, titanic harmony prevailing the conflict, but of an exquisite adjustment of tune and time to the varied needs of a thousand dancing feet. A second marvel was the facility with which these commercially-minded beings enveloped their figures in sales-talk costumes.

Among the British leaders of the dance were two visiting guests, Miss Tea and Miss Spice, the former gowned in green and black, the latter in a cloud of delicate perfume. Miss Cotton, in a print creation, and Miss Linen, in white, looked lovely. The athletic Miss Jute wore a sports outfit in the new coarse weave. Mrs. Cloth appeared in travel tweed and Mrs. Silk in old brocade. The matronly Mrs. Raw Wool evinced hearty pleasure at the admiration aroused by her slim and beautiful young daughter, Miss Yarn, and the latter's equally graceful friend, Miss Cord. Miss Pottery was dressed as a china doll, though it was whispered a more sedate costume had better become her age. Mr. Coal and Mr. Boots were made up as Negroes. Mr. Tin Plate and Mr. Cutlery appeared as knights of old, the former in shining armour, the latter equipped with a bright blade. The fraternal companionship of the Steel brothers, Bars and Wire, won for them the nickname, "Thick and Thin of it." The somewhat disreputable Mr. Spirits was viewed with disdain by several members of the company. But since he held an important position in the commercial world his presence was acclaimed by many and tolerated by all.

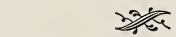
Distinguished by their garlanded heads among the Canadian leaders were the three Grain sisters, Miss Wheat, Miss Barley and Miss Oats. Miss Fur wore a costume trimmed with fox. The blond beauty of Mrs. Flour and the high colour of Miss Apple, daringly emphasized by a gown of pale green, were as attractive to the eye as the gossip of Miss Paper and the crisp retorts of Miss Cereal to the ear. Mr. Aluminum and Mr. Nickel made very

successful knights, but Mr. Lead appeared borne down by the weight of his armour. Mr. Vacuum Cleaner was as loudly loquacious as his friend, Mr. Tobacco, was silent and meditative. The jovial laugh of Mr. Bacon and the highly-polished manners of Mr. Lumber won for these gentlemen a host of friends. Mr. Salmon, Mr. Lobster and Mr. Pickles wore respectively pink, red and green ruffs after the fashion of the seventeenth century.

To describe the amazing processional which followed is quite beyond the power of a simple old soldier. Suffice to say they kept it up until broad daylight. Then, as suddenly as the crack of a finger, at the sixth stroke of Old Ben every exhibit was back in its place.

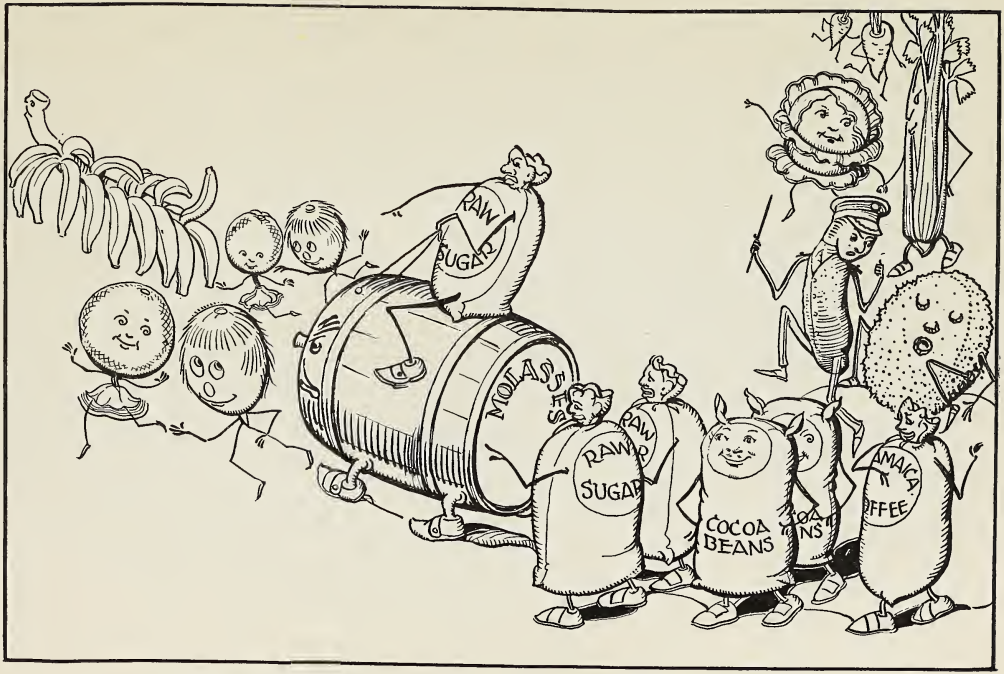
"A very interesting story," commented the manager of the exhibition, to whom the watchman had related the episode. "But how does it account for the fact that your timeclock remained unpunched between the hours of two and six last night?"

Whether the watchman had seated himself for a smoke, fallen asleep and dreamed the tale (a most unlikely action on the part of an ex-military man), or whether certain emotions aroused during the day had seized upon the shadowy shapes of the dimly-lit exhibits and fashioned these into the symbolic imagery of a waking vision, is a difficult matter to decide. Certainly the earnest manner of the narrator tended strongly to confute any suspicion that the story had been deliberately fabricated to excuse negligence.



After considerable discussion the class decided to record the two lessons dealing with Empire Trade after the following fashion:

First the names of the various dominions constituting the Empire, with the exception of Canada, were written at intervals down the centre of one page in their Geography Story Books. To the right of each name were indicated, either by means of words, cut-out pictures or thumbnail drawings, the exports of that country to Canada, and to the left the imports from Canada.



CHRISTOPHER'S DRAWING OF THE PRODUCTS FROM THE BRITISH WEST INDIES

Down the left side of a second page the chief exports of Canada were listed. Opposite each were written the names of the dominions to which these exports were shipped in considerable quantities. The chief imports of Canada were treated in a similar fashion on a third page.

Christopher and Bob's friend, Bill, entered into a spirited competition as to which could make the best drawing of the meeting in the auditorium between the Canadian and West Indian exhibits.

Chapter XXIX

EXAMINATIONS

"YOU haven't said a word about examinations!" protested Mary Merton after she and her brother Bob had finished reading the original pages of this story.

"Is it necessary that anything so disagreeable enter the tale?" asked the author.

"Certainly!" replied Bob. "A sports editor wouldn't write a lot about football practice and then say nothing of the game."

"But what have football games to do with examinations?" the author meekly inquired. "Unless it be that in both you get your bumps."

"Examinations are like games which the school team plays with the scrub team when getting in shape for the finals," explained the boy. "Both show up the weak spots and the strong spots in your organization. If a fellow is a good sport he gets busy and builds up his defence.

"Of course, in football the real test comes when the school team is matched against an outside team. And the real test of schooling comes when you go into the world and play the game of life," he concluded sagely.

"Examinations are not disagreeable things," added Mary. "They are ever so interesting and exciting—especially the kind Miss Goldenrule gives."

The author, calling to mind numerous unhappy evenings he had spent "plugging" the names of countries and capitals, imports and exports, mountains and plains, rivers and lakes, cities and ports, in preparation for dreaded geography tests, determined to interview the astonishing Miss Goldenrule, who had apparently succeeded in making geography examinations as interesting and exciting as football matches.

"I know one answer to the puzzle," he exclaimed,

when after considerable search he at last discovered that lady on the golf links practising chip shots to the eighteenth green. "A good sport can make a game of anything."

"What ever are you talking about?" was the rejoinder.

Thereupon the author explained the reason and purpose of the interview.

"Won't you come for a drive and disclose the magic which makes examinations a joy and delight to forty young lives?" he concluded.

"New car?" inquired Miss Goldenrule as they started down the road.

"A month-old baby!" replied the owner proudly.

"Such a dirty, disagreeable job, buying a car!" sighed the teacher.

"Eh!" exclaimed the man, forgetting politeness in astonishment.

"I mean taking the car apart and counting the nuts, bolts, screws, rivets, ball-bearings and all those things," the lady explained.

"Nothing of the sort!" expostulated the driver. "Where did you get that idea? The salesman asked me to jump in and take the car for a spin. I had the thrill of my life as I listened to the purr of the motor, felt the response to the wheel and got the bite of the brakes. Knew it was the car I had been wanting all my days."

"So glad to learn that trying out a car is not the painful experience I had supposed," murmured Miss Goldenrule. "It must be much like the new form of examination held in our school since we stopped teaching subjects and began teaching boys and girls. We no longer pull pupils to pieces and check over all their little 'knows' and 'don't knows.' Rather we take them out on an examination speedway and see how they perform."

"Yes!" said the author, in a mystified tone of voice. "Do I understand that you no longer check up a pupil's

knowledge? Don't you teach your geography class any facts?"

"Indeed, our boys and girls learn a great many facts, probably more than in the old days," was the reply. "But they learn them in the process of making and carrying out plans, not as things to be remembered but as things to be used. We teachers are more concerned with training pupils to work with facts than with compelling them to store facts away. Our examinations, which we call function rather than fact examinations, tend to show not so much *what* a student knows as *how* he knows—the difference between the knowledge of a clerk in a hardware store who is familiar with the location of various tools upon the shelves and the knowledge of a mechanic in a garage who understands how these tools may be used."

"Don't all your pupils take the same lessons?" persisted the man. "Or does each study according to his fancy?"

"You dear old-fashioned thing!" laughed the lady. "Being in the army spoiled you—every one wearing the same uniform, buttoned and belted in exactly the same fashion. Of course they all take the same lessons, but that doesn't mean they all remember or are expected to remember the same facts. Boys and girls are individual human beings even as ourselves. You and I live in the same town, but you don't know where the fitting-room is in Miss Tweed's Dressmaking Parlour and I don't know where the editor's office is in The News Building. We both can find our way to the post office, however."

"Meaning what?" asked the other.

"Meaning that boys and girls, like grown people, have special as well as common interests," answered Miss Goldenrule. "Isn't it rather absurd to expect a boy in Sudbury and another in Toronto to possess exactly the same bits of geographical information; or Mary, with her interest in scenery, people and customs, to know precisely the same facts as Bob, who is keen about machinery and industrial processes? We furnish our homes according to

our means and tastes; why should we not be accorded the same privilege in the matter of furnishing our minds?"

"Still I don't see how an examination can be conducted, which takes no account of a pupil's knowledge," said the author.

"We do take into account a pupil's knowledge, more especially the usability of that knowledge," replied Miss Goldenrule. "But we no longer narrowly limit him as to its selection and use. May I illustrate by means of the question given on last Friday's geography examination?"

"The question? One question?" interrupted her listener.

"One question," replied the teacher.

"How in the world can you sample a pupil's knowledge with one question? You should have used forty or fifty."

"You talk as if a boy's mind were a cargo of cheese. It's a living machine. You don't sample parts of a railway engine. You find out how it runs."

"I apologize," said the author. "Please tell me the question on last Friday's examination."

"*The Premier of British Columbia proposes to advertise that province in several magazines for the purpose of attracting tourists and settlers. Make out one such advertisement full-page size,*" recited the teacher.

"Shades of the ancient pedagogues!" exclaimed her companion. "Do you call that an examination question? It's a straight business proposition."

"Why not?" replied Miss Goldenrule. "Don't you expect boys and girls, when they leave school, to use their training in the solution of business propositions? Or does your generation continue to amuse itself reciting the countries and capitals of the world; marking mountains, rivers, bays and capes on maps; filling blank spaces in paragraphs with words; or deciding whether '*The Mississippi has its source in the Arctic Ocean*' is a true or false statement? —Like a miser stacking and restacking coin he never expects to use!"

The author pondered some time before replying. "Light is beginning to break in three directions. First gleam—I understand what Bob meant when he said examinations were games one played with the scrub team while getting in shape for the finals."

"I beg your pardon!" interrupted Miss Goldenrule.

"No reference to the teacher, I am sure," the author hastened to say. "The boy was merely trying to tell an old-fashioned and rather thick-headed chap that geography was practised in his school after much the same fashion as it was used in real life.

"Gleam number two," he continued—"I see how Mary would get a thrill out of examinations beyond the mere thrill of beating competitors. It's a real job she tackles.

"Gleam number three—you have abolished plugging and cramming by making it useless to plug and cram. The pupils might in all fairness have been allowed to use their textbooks while writing."

"They frequently do. Why not?" laughed the teacher. "Their fathers and mothers use timetables, maps and folders while planning a summer vacation. It merely happened that on this occasion texts were not used."

"What did happen?" asked the man.

"May I recount three very satisfactory answers?" replied Miss Goldenrule.

"Mary's effort was headed in block letters, 'See British Columbia.' It began after this fashion: 'Toiling up the steep slope of the Rocky Mountains, the engine grunts with envy at the Bow River tobogganing down. At the top of the world we enter British Columbia. The train cautiously feels its way through a corkscrew tunnel, clings to a frail bit of trestle skirting the side of a precipice, squirms along miles of dimly-lit snow-sheds and finally emerges from the Kicking Horse Pass. We now enter a lovely valley fastened to the western side of the Rockies with an enormous safety-pin made by the bent Columbia River on the north and the bent Kootenay River on the south. Mount Sir

Donald nods a stately head as we pass and the Finger Lakes gleam like gold fillings in the teeth of the range—'

"Don't laugh!" the teacher impatiently exclaimed. "You drove balls aplenty into the rough before you got them travelling down the fairway. Mary is getting power and direction into her stroke. Some day she will likewise get control. Why don't people exercise decent golf manners toward children learning the game of thinks?

"I beg your pardon," she continued in her usual tone of voice. "At the present time Mary is striving desperately to connect certain power lines of her being with a recently installed thinking plant. A little ridicule might hold up the work for years, might disrupt the whole enterprise. Her attempt is daubed, disjointed, inaccurate, but yet an intensely earnest effort to paint an attractive picture of a trip through British Columbia. She has genius for handling thought in words. Some day, if she comes through, Canada may be proud of another good speaker, writer or journalist.

"Bob, on the other hand, has, like his father, a business head. His ability lies along the line of assembling and organizing facts, of fitting together the details of a situation. He thinks more broadly but perhaps less loftily than his sister. His mind is a heavy-duty rather than a high-speed engine.

"Bob, like Mary, headlined his advertisement in block letters. 'THE TREE OF OPPORTUNITY' ran his title. Beneath was drawn a tree having four main limbs. The trunk was inscribed with the word, *Industry*. On the four limbs were printed the words, *Mining*, *Fishing*, *Lumbering* and *Agriculture*. Branches from these limbs bore apples (the size of pumpkins) representing products. The several branches from the limb entitled *Lumbering* were marked *Red Cedar*, *Spruce*, *Douglas fir*, etc. The red-cedar branch bore apples labelled *Shingles* and *Lumber*. Fruit on the spruce branch were designated *Pulp*, *Paper*, *Lumber* and *Aeroplane wood*. The drawing itself was crude, but the

selection, arrangement and organization of detail was most satisfactory. Bob is likely headed for business, law or politics.

"Christopher, who wrote the third of the three answer papers in question, has a highly specialized mind. He is appallingly deficient in word ability, being quite unable either to learn through language or to express himself by means of language. Heads the class in arithmetic and drawing, foots it in literature and history. He was transferred to this school some six months ago. His report card showed him to be repeating the seventh grade for the third time. It likewise indicated a twenty-three per cent. standing in geography during his first year in that grade, a fourteen per cent. standing during his second year, and a zero for the first part of the third. The boy was utterly discouraged. Our principal handed him to me with the request that I see what could be done for him. I haven't accomplished much in the matter of literature and history. But his geography has picked up wonderfully, due largely, I believe, to the fact that we use various forms of constructive work in dealing with that subject.

"Christopher's sheet was headed, 'A Land of Sport.' Instead of the letters being in the usual block form, each was drawn to represent the animated figure of a sportsman. Very cleverly done! The body of the advertisement consisted of a map of British Columbia upon which appeared thumbnail sketches of fishermen catching trout and salmon, hunters stalking goat and antelope, mountain climbers scaling dizzy heights, a golfer staring in bewildered amazement at a crag-nested fifteenth green.

"The most interesting thing from your point of view, Mr. Author, is the circumstance that, while all three candidates selected facts adequate to the carrying out of their purpose, each chose a set quite different from that of either of the others. A second important feature is that each made his own plan and chose his own mode of expression. Christopher, who thinks in images rather than words, and who expresses ideas with his hands rather

than his tongue (or its servant, the pen), would, in the course of an ordinary examination, have handed in the poorest and not one of the best answer papers. Fairness demands that an examination shall afford all candidates ample scope—scope in making plans, scope in selecting and organizing material, scope in expressing ideas."

"How do you mark the answers?" inquired the author.

"You would ask that," sighed the teacher. "In the first place, you must understand that promotions in our school are not based on the results of a final examination but on the progress of the pupil throughout the year. Our principal says that a teacher who knows her business and who has had charge of a class for a year is the best judge as to whether or not a pupil has attained the goal. Doubtful cases are usually recommended for trial promotion. You see, examinations have ceased to be trials by ordeal and have become witnesses in a trial by judge and jury.

"In the second place, examinations are more in the nature of practices than tests, games in which the pupils try out their mental skill and discover their strength and weakness. The writing of a paper is of greater importance than its marking, its correction than its valuation.

"In a function examination the papers are usually graded in four groups, poor, fair, good and excellent, on a basis of fifty per cent. for the selection of adequate and suitable material, and fifty per cent. for the organization and presentation of ideas.

"An interesting change has come about in the attitude of our boys and girls since we began using function in place of fact examinations. Pupils taking a high standing are admired rather than envied. Their work, which is always displayed, compels its own respect. Pupils taking a low standing, instead of being discouraged, are spurred to greater effort. The game is open to all alike and opportunity may be just around the corner.—How wonderful the sunset is this evening, a brooch of gold on the throat of sky and lake!"

"What do you think of the chapter?" the author inquired of Bob and Mary after they had finished reading his attempt.

"Not much!" replied Bob. "You spend a lot of time arguing, when all you need to say is that examinations are try-out games in which every chap should have a chance to show his stuff. Why don't you put in more of Miss Goldenrule's questions? Some of the fellows might like to try them."

The author acknowledged the justice of the criticism and, in response to the suggestion, obtained from Miss Goldenrule other examination problems which appear at the conclusion of this chapter.

"And what is your opinion?" he asked Mary.

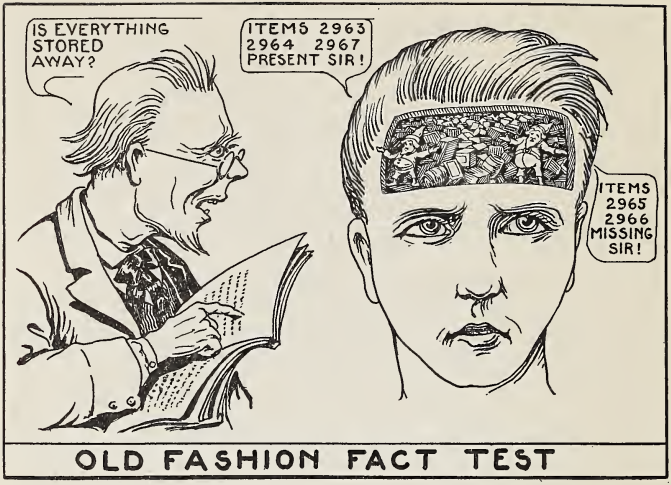
"I like it," replied the girl, "and I think other girls and boys will want to read it. We have our business in life the same as grown-ups. Mine is going to school, just as dad's is contracting and mother's housekeeping. We don't want to be babied all the time. We like to be taken seriously more than most grown-ups suppose. And so we are glad to listen to a sensible discussion of our business. I am sure there are a great many boys and girls who would be as interested in the new kind of examination as they are in new rules for softball.

"I think," she continued, "Miss Goldenrule should have told more about Christopher. He came to our school with the ugliest temper. Just sat and glowered through scowling white eyebrows. He came out of his shell a wee bit the day teacher asked him to help make a model on the sand-table.

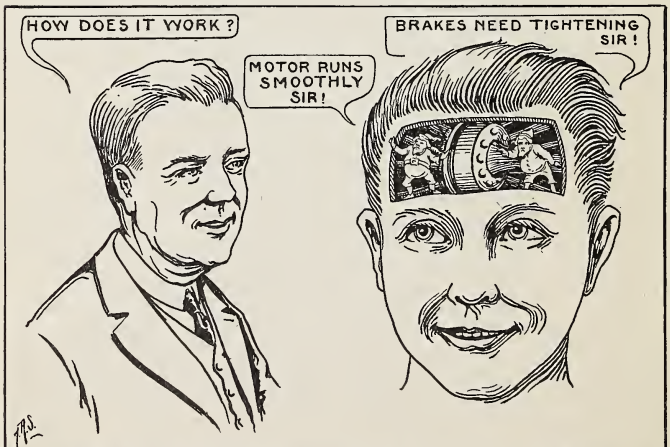
"But his first geography examination made the big change. We had all been given road maps and asked to describe the Ferguson Highway. Chris didn't do a thing for a long while—just glowered. Then he asked Miss Goldenrule if he might draw something. She said, of course, if he wished. And he drew a map of the highway with the cutest little pictures on it—trucks loaded with logs, automobiles with canoes strapped to their tops, forests and mines and mills. You should have seen it.

"When he got his paper back marked 100 he—he cried," Mary continued in awe-stricken tones. "Not a blubbery cry, just a teary cry. And Chris never cries. When he fights his blue eyes blaze. He said he'd never go back on any one who gave him a fair deal like Miss Goldenrule did. Now he works harder than any one else in school. And he is just the nicest boy."

"Mary means Miss Goldenrule gave him a real try-out and he made good and won a place on the team," her brother stated brusquely.



OLD FASHION FACT TEST



NEW FASHION FUNCTION TEST

Function Examination Problems

1. You are in charge of the exhibit from Alberta at the Canadian National Exhibition, Toronto, Ontario. What materials would you select and how would you arrange them in the portion of the building placed at your disposal?

2. You are employed as director by the Educational Motion Picture Company to make five reels descriptive of life in New Brunswick. Select a title for each of the five reels. Describe the content of *any one* reel either in writing or by making sketches of four typical set-ups.

3. You are a member from Toronto, Ontario, of the Dominion Parliament. The member from Vancouver city, British Columbia, has objected to large sums of money being spent on the enlargement of the St. Lawrence River Canals between Prescott and Montreal. State the objections he has probably urged and state the arguments you would present in answer to each objection.

4. You are the Canadian Commissioner in London, England. A Welsh miner, a Lancaster spinner, a Norwich farmer and a Grimsby fisherman contemplate emigrating to Canada and have come to you for advice. What advice concerning location, employment, living conditions, etc., would you give *any one* of the four?

5. A railway official at Montreal said: "A curious thing happened at the yards this morning. Ten cars (each loaded with different freight) arrived from ten different points in Canada. At the same time ten cars (each loaded with different freight) were being sent out to those same points."

Make out the incoming and outgoing sheets for the yard (that morning), using the following headings:

Car Number From To Loading

6. You are planning a week's vacation in a neighbouring province. Using railroad timetables and your geography text, outline in definite detail how you will spend each day.

7. You, as agent, have orders to invest $100,000 in real estate to the best advantage for a ten-year holding in one of the following cities, Vancouver, Winnipeg, Toronto or Montreal. Give reasons for your choice of one locality in preference to the others.

8. A baseball tournament week is being organized among the three chief centres of your province. Home-and-home games are to be played by every team with each of the other two—six games in all. The games are to be played either in the morning

from nine till twelve or in the afternoon from two to five. Plan a schedule for Monday, Tuesday, Wednesday, Thursday, Friday and Saturday of that week which will involve least expense to the management.

Use C.P.R. and C.N.R. and motor-bus timetables. Make out expense sheets for each team allowing 10 men per team; 2c. per mile transportation fare; $1 for each meal and $3 for each bed (train or hotel) while the teams are on the road.

9. You are Canadian Trade Commissioner to the British West Indies. What advice would you furnish the Cabinet at Ottawa as to possibilities of improving the trade relations between these two members of the British Empire?

10. Describe or paint a typical rural scene in *one* of the following districts:

(1) The Prairie Provinces.

(2) The Province of British Columbia.

(3) The Province of Quebec.

(4) The Maritimes.

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